

# **GENERAL REEVALUATION REPORT**

## **BRUNSWICK HARBOR, GEORGIA EAST RIVER TURNING BASIN JEKYLL ISLAND MITIGATION PLAN MODIFICATION**



US Army Corps  
of Engineers®  
South Atlantic Division  
Savannah District

**MARCH 2007**

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## EXECUTIVE SUMMARY

This General Reevaluation Report (GRR) for Brunswick Harbor, Georgia, documents the need to revise the location of the currently authorized turning basin in the East River and its associated mitigation. Approval of this project change is requested to avoid the risk of excessive construction costs anticipated for the currently authorized Jekyll Island Mitigation site. The currently authorized cost for mitigation of \$5,763,000 is now anticipated to be nearly double that amount and it was deemed prudent by the Project Delivery Team (PDT) to view other alternatives. There was no response from likely contractors to a Request for Information concerning their interest in the project. Based on current estimates for the revised mitigation plan and for additional dredging in the existing turning basin location, there will be no overall cost increase if the project moves forward as authorized. The Water Resources Development Act of 1999 (WRDA 99) initially authorized the project at a total project cost of \$50,717,000. Then, based on a January 2003 Savannah District Post Authorization Change (PAC), the 2003 Consolidated Appropriations Resolution subsequently increased the total project cost to \$78,879,000, subject to a favorable report of the Chief of Engineers. A revised PAC in September 2003 raised the Authorized Project Cost further to \$96,277,000 and the Section 902 Limit to \$120,837,000. It is anticipated that the proposed change will result in a total project construction cost of \$117,381,000, or just below the Section 902 Limit. The PDT believes this is the best course of action and it is clear that with the reduction in damages to wetlands that the agencies are also in agreement. The project's major customer, the Brunswick Bar Pilots, have been involved since the plan's inception and are in agreement with the revision as well.

**Table of Costs**

<b>Existing Plan</b>	<b>Cost</b>	<b>Proposed Plan</b>	<b>Cost</b>
Turning Basin Construction	\$11,083,350	New ERTB	\$13,014,138
Jekyll Mitigation Construction	\$10,320,000	Revised Mitigation	\$2,257,340
<b>TOTAL</b>	<b>\$21,403,350</b>		<b>\$15,271,478</b>

## Project Historical Summary

The major project features include deepening the existing entrance and inner channel an additional 6 feet, widening an existing turning basin, and enlarging the East River Turning Basin. Features added during design and approved by South Atlantic Division in a February 2002 Limited Reevaluation Report (LRR) included creation of an island disposal area using a portion of the new work construction material and dredging a bend widener as a safety feature for vessel movement. The Department of Army and the Georgia Department of Transportation (GADOT), as the non-Federal sponsor, signed a Project Cooperation Agreement (PCA) on 5 April 2002 and an amendment to the PCA on 30 July 2004. The project is funded on a 65/35 cost share basis.

The Savannah District completed Pre-construction, Engineering, and Design (PED) in the spring of 2002. Subsequently, USACE awarded a contract to deepen the bar channel to Bean-Stuyvesant Dredging Company who completed the work on June 21 2004. Bids for a second deepening contract for the Inner Harbor channel were opened on October 17, 2002. The low bid

of \$65,893,464 significantly exceeded the independent government estimate of \$28,400,000. What followed was a cancellation of the solicitation based on a lack of competition, unreasonable bid prices, and insufficient government funds availability. An award would have also exceeded the Section 902 limit of WRDA 86. Great Lakes Dredge and Dock filed suit to protest the cancellation and was successful in their challenge. The Federal Court ruled that if the project were awarded, it must be awarded to Great Lakes, and it was on July 30, 2004.

With the cost increase to \$96,277,000, the average annual benefits of \$7,700,000 compared to average annual costs of \$6,635,000, result in a benefit-to-cost ratio of 1.16 to 1. The authorized project (36-foot depth) remains the National Economic Development (NED) plan. The remaining benefits-to-remaining costs ratio at a 7 percent discount rate is 3.4 to 1.0.

## **GENERAL REEVALUATION REPORT BRUNSWICK HARBOR, GEORGIA, EAST RIVER TURNING BASIN JEKYLL ISLAND MITIGATION PLAN MODIFICATION**

### **1.0 DESCRIPTION OF AUTHORIZED PROJECT**

Brunswick Harbor is a deep draft navigation project located in an estuary along the Atlantic Coast approximately 80 miles south of Savannah, Georgia, and 70 miles north of Jacksonville, Florida, in Brunswick, Georgia (See Figure 1 for a vicinity map and recommended improvements in the harbor deepening project). General improvements recommended in the Report of the Chief of Engineers, dated 6 October 1998, and authorized in the Water Resources Development Act of 1999 (WRDA 1999, Public Law 106-53) include:

#### Main Project Features:

- Widen Upper East River, Turtle River Lower Range and Sidney Lanier Bridge area to 400 feet
- Deepen inner channel from -30 feet mean low water (mlw) to -36 feet mlw
- Deepen entrance channel from -32 feet mlw to -38 feet mlw
- Enlarge Lower Turtle River Turning Basin from 1,200 feet in diameter and 30 feet deep to 2,500 feet long by 1,150 feet wide by 36 feet deep
- Construct New East River Turning Basin 1,100 feet long by 1,100 feet wide by 36 feet deep and de-authorize the existing East River Turning Basin
- Restore 59 acres of wetlands on Jekyll Island as mitigation for 18.1 acres of wetlands lost due to the construction of the new East River Turning Basin

On 15 March 2002, the US Army Corps of Engineers, South Atlantic Division (SAD) approved a Limited Reevaluation Report (LRR) entitled, "Limited Reevaluation Report, Brunswick Harbor Deepening Project, Modifications During PED". During the Pre-construction, Engineering, and Design (PED) phase, several additional features were needed as shown in Figure 1 and summarized below:

#### Added Project Features from the LRR:

- Widen South Brunswick River channel from 400 feet to 500 feet for a distance of 3,500 feet as a safety consideration for vessel movement to alleviate Brunswick Pilots' concerns.
- Use dredged material beneficially to create a bird island in the harbor area. This feature provided additional environmental benefits and decreased both dredging and disposal area costs.

### **2.0 AUTHORIZATION**

The WRDA 1999, Section 101(a)(19) (See Appendix C), authorized a project for navigation at Brunswick Harbor, Georgia, in accordance with the report of the Chief of Engineers, dated 6 October 1998. The project provides for deepening of the harbor to provide a 36-foot deep inner harbor and a 38-foot deep outer harbor navigation channel. The authorized project cost was \$50,717,000 with a federal share of \$32,966,000, and a non-Federal share of \$17,751,000.





### 3.0 PROJECT SPONSOR

The Georgia Department of Transportation (GADOT) is the non-Federal sponsor for construction of the Deepening Project and its subsequent operation and maintenance (O&M). The PCA (Appendix A) was signed on 5 April 2002 and an amendment to the PCA was signed on 30 July 2004.

### 4.0 FUNDING SINCE AUTHORIZATION

Section 118 of Division D of the 2003 Consolidated Appropriations Resolution amended WRDA 99 by changing the total project cost from \$50,717,000 to \$78,879,000 with an estimated Federal cost of \$53,020,800, and an estimated non-Federal cost of \$25,858,200, in accordance with the Corps of Engineers Post Authorization Change Report, dated January 2003, as amended by the Chief of Engineers. The total project cost is \$96,277,000 with an estimated Federal cost of \$61,709,600 and non-Federal cost of \$34,567,400. Federal and non-Federal funding by fiscal year is shown below in Table 1.

**Table 1: Federal and non-Federal Funding by Fiscal Year**

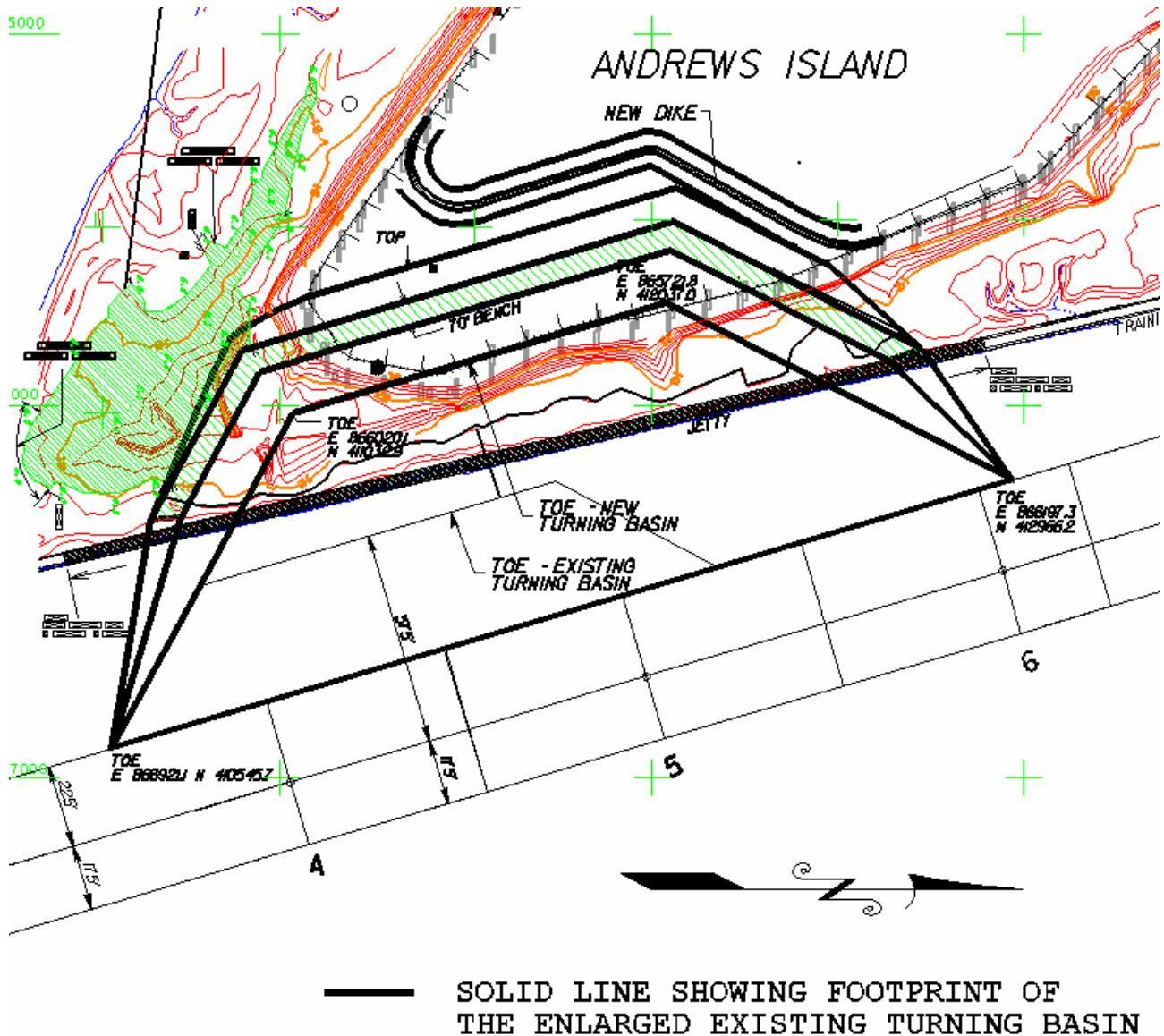
	YEAR	WORK ALLOWANCE	EXPENDED	OBLIGATED
<b>FEDERAL</b>				
<b>GI RECON AND FEASIBILITY</b>		\$2,592,000.00	\$2,592,000.00	\$2,592,000.00
<b>CCS-421 PED</b>	FY 98	\$731,000.00	\$82,401.25	\$82,401.25
	FY 99	\$600,000.00	\$1,185,104.29	\$1,245,267.86
	FY 00	\$503,000.00	\$446,633.25	\$386,782.68
	FY 01	\$0.00	\$119,861.21	\$119,548.21
<b>TOTAL FEDERAL PED</b>		\$1,834,000.00	\$1,834,000.00	\$1,834,000.00
<b>TOTAL FEDERAL GI</b>		<b>\$4,426,000.00</b>	<b>\$4,426,000.00</b>	<b>\$4,426,000.00</b>
<b>CONSTRUCTION GENERAL</b>				
<b>CCS-211</b>	FY 01	\$210,000.00	\$159,054.69	\$159,054.69
	FY 02	\$1,311,000.00	\$1,300,284.93	\$1,359,892.53
	FY 03	\$8,903,000.00	\$8,952,434.09	\$8,903,217.62
	FY 04	\$5,773,600.00	\$5,781,948.64	\$5,773,378.24
	FY 05	\$9,657,000.00	\$9,627,206.45	\$9,650,613.56
	FY 06	\$18,850,500.00	\$8,716,369.77	\$18,318,327.02
	Thru Oct 06	\$0.00	\$25,990.69	\$43,358.76
<b>TOTAL FEDERAL CG</b>		<b>\$44,705,100.00</b>	<b>\$34,563,289.26</b>	<b>\$44,207,842.42</b>
<b>TOTAL FEDERAL PED AND CG</b>		<b>\$46,539,100.00</b>	<b>\$36,397,289.26</b>	<b>\$46,041,842.42</b>
<b>NON-FEDERAL</b>				
<b>FEASIBILITY</b>				
<b>CCS-110</b>	FY 00	\$0.00	(\$2,876.00)	\$0.00
	Thru FY 00	\$840,000.00	\$837,070.57	\$839,947.18
	FY 02	\$0.00	\$0.00	\$0.00
	Thru Jan 02	\$0.00	\$0.00	\$0.00
<b>TOTAL NON-FED FEASIBILITY</b>		<b>\$840,000.00</b>	<b>\$834,194.57</b>	<b>\$839,947.18</b>



	YEAR	WORK ALLOWANCE	EXPENDED	OBLIGATED
<b>PED</b>				
<b>CCS-412</b>	FY 99	\$775,500.00	\$344,839.35	\$345,864.90
	FY 00	\$0.00	\$191,440.44	\$193,514.89
	FY 01	\$10,971.13	\$204,772.67	\$201,754.57
	FY 02	\$0.00	\$29,898.40	\$29,898.40
	FY 03	\$0.00	\$15,426.65	\$15,426.65
	Thru Oct 03	\$0.00	\$0.00	\$0.00
<b>Sub-total</b>		\$786,471.13	\$786,377.51	\$786,459.41
<b>Minus work item 41KHBF</b>		(\$10,971.13)	(\$10,971.13)	(\$10,971.13)
<b>TOTAL NON-FEDERAL PED</b>		<b>\$775,500.00</b>	<b>\$775,406.38</b>	<b>\$775,488.28</b>
<b>NON-FEDERAL CG</b>				
<b>CSS-211</b>	FY 02	\$1,370,650.00	\$16,089.22	\$981,089.22
	FY 03	\$2,400,000.00	\$3,387,697.24	\$2,458,974.08
	FY 04	\$1,800,000.00	\$972,750.89	\$1,713,075.99
	FY 05	\$6,500,000.00	\$6,447,005.58	\$6,735,407.93
	FY 06	\$10,280,250.00	\$5,581,018.44	\$9,869,406.72
	Thru Oct 06	\$0.00	\$22,466.93	\$24,032.44
<b>TOTAL NON-FED CONSTRUCTION</b>		\$22,350,900.00	\$16,427,028.30	\$21,781,986.38
<b>NON-FED BERTH DREDGING</b>		(\$905,250.00)	(\$807,000.00)	(\$807,000.00)
<b>TOTAL NON-FED CON AND PED</b>		\$22,221,150.00	\$16,395,434.68	\$21,750,474.66
<b>TOTAL NON-FEDERAL</b>		<b>\$23,072,121.13</b>	<b>\$17,240,600.38</b>	<b>\$22,601,392.97</b>
<b>TOTAL PED AND CONSTRUCTION</b>		<b>\$68,760,250.00</b>	<b>\$52,792,723.94</b>	<b>\$67,792,317.08</b>

## 5.0 PROJECT CHANGE

The purpose of this Limited Reevaluation Report is to propose a modification to the authorization for the turning basin in East River. This modification involves enlarging the existing East River turning basin from 750 feet by 1,000 feet by 30 feet deep to 1,100 feet by 1,100 feet by 36 feet deep (figure 2) and adding transition areas north and south of the existing turning basin (figure 3) for maneuverability, rather than building the authorized turning basin of the same dimensions, in the authorized upstream location. This will lead to a significant decrease in mitigation costs since enlarging the existing turning basin will result in impacts to only 7.3 acres of wetlands as opposed to the 18.1 acres of wetlands impacted by building a new turning basin in the currently authorized location. Enlarging and deepening the existing turning basin will require wetland mitigation of 16.7 acres as opposed to 59 acres for building the new turning basin as currently authorized in the upper East River.



**Figure 2: Expanded Existing Turning Basin**

## 5.1 BACKGROUND

The Brunswick Harbor Deepening project authorization provides for construction of a new 1,100-foot X 1,100-foot X 36-foot deep turning basin in the upper East River (figure 4). Approximately 18.1 acres of wetlands would be destroyed during the construction of this basin. To mitigate for this loss, 59 acres of impacted wetland on Jekyll Island would be restored by excavating the area to an elevation conducive to marsh establishment.

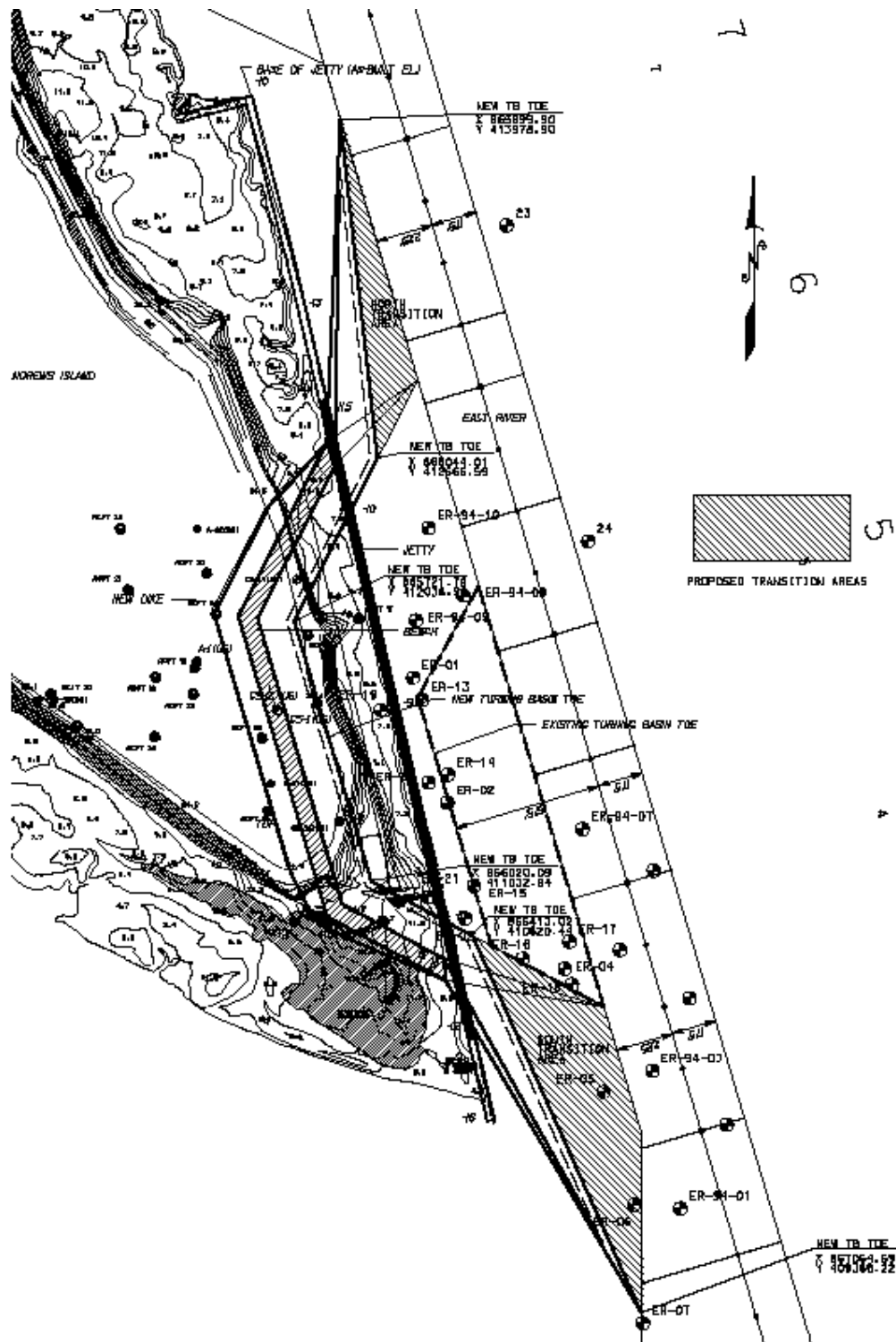


Figure 3: Expanded Existing Turning Basin with North and South Transition Areas

Restoration of the wetlands generally requires excavating down to -4.1 feet mean low water (MLW) with ditches dug into the site at -3.1 feet MLW (the level of high tide adjacent to the site is +6.0 MLW). The original plan of construction called for the dragline removal of 300,000 cubic yards of material. This excavated fill was to be deposited adjacent to the existing high ground on the site that was the original deposition area for the fill from an old boat basin. The deposited fill was to be stacked to minimize the acreage used to store this material. The estimated cost of this mitigation feature was \$741,500. In March 2003, cost estimates were developed for the six options listed in Table 2 for the disposal of mitigation material. At that time there was some doubt as to whether we would be able to use the upland disposal area (Option 3 in Table 2) located on Jekyll Island for the disposal of the material. In October 2003 the Jekyll Island Authority (JIA) and the Corps of Engineers came to the conclusion that the site on Jekyll Island being considered for the disposal of the material was inadequate for this purpose because of the size of the area and the amount of material to be disposed of. With the site on Jekyll Island unavailable the next less costly plan was Option 2 with a cost of \$4,594,000. The problem with Option 2, however, is that it would take 30,000 dump trucks to move all of the material from the Jekyll Island site to the Andrews Island Disposal Area, which, besides causing major traffic problems, would damage existing roads. With no local support for Option 2, the next least costly plan was Option 4. This is the option that was to be the method for constructing the Jekyll Island mitigation site.

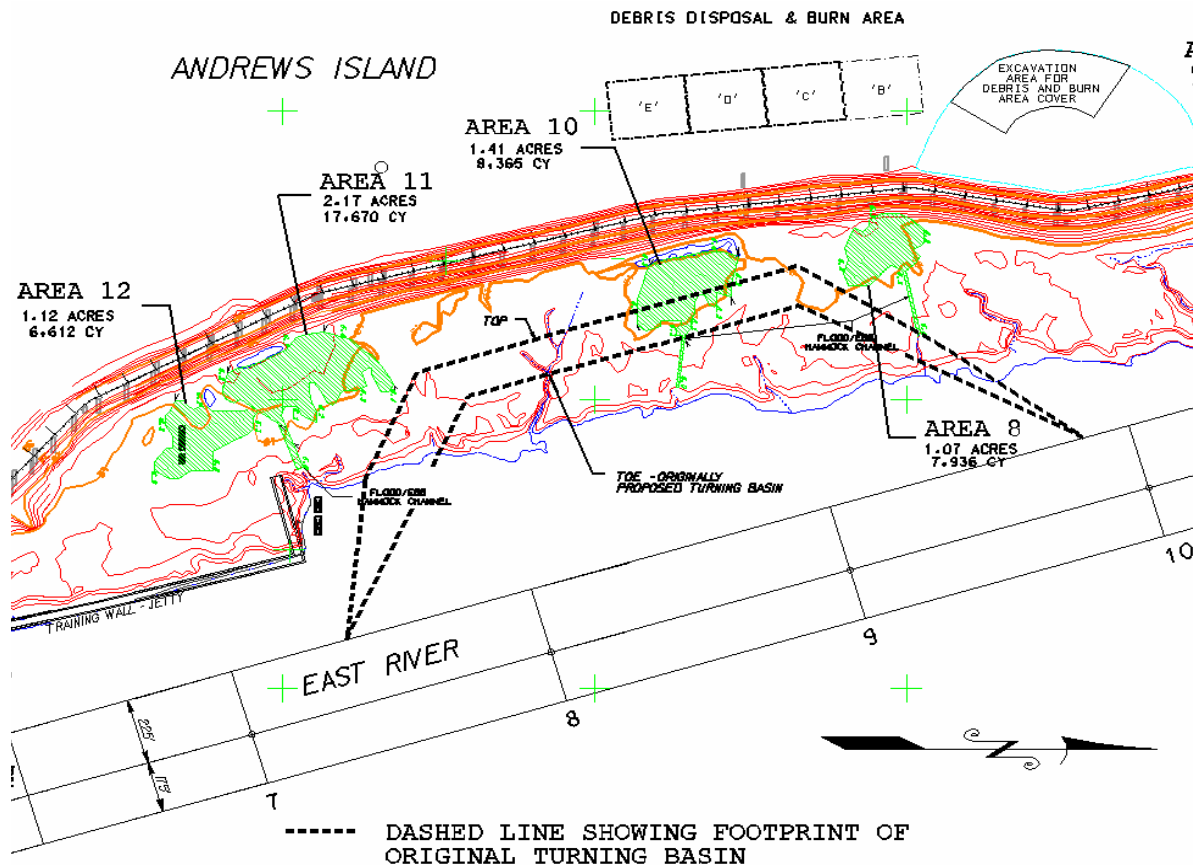


Figure 4: Authorized New Turning Basin

**Table 2: Evaluated Options for the Disposal of Jekyll Island Mitigation Material**

OPTION	DESCRIPTION	COST	CONSTRUCTIBLE	REASON
1	Dredge access channel and barge mitigation material to ocean disposal site.	\$3,480,000	No	Ocean disposal not possible due to possible PCBs in excavated material.
2	Excavate material w/land equip and load in 12 CY dump trucks for 15-mile haul to Andrews Island Disposal Area.	\$4,594,000	No	Impact to local roads & the time required to complete this part of the project.
3	Excavate material w/land equip and load in 12 CY dump trucks for 2-mile haul to upland disposal area.	\$3,180,000	No	The upland site proposed was inadequate for disposal of the excavated material.
4	Dredge access channel and barge mitigation material to Andrews Island Disposal Area site.	\$4,610,000	Yes	
5	Construct a conveyor system to transport & load mitigation material on barges to be transported to Andrews Island.	\$5,218,000	Yes	
6	Dredge a partial access channel and pump all excavated material to Andrews Island using a 16" dredge.	N/A	No	Option eliminated because 9+ mile pumping distance is not practical.

Comparative costs for each option in Table 2 were developed using the Corps of Engineers Dredge Estimating Program (CEDEP) and M-CASES cost databases. To facilitate equal comparison between Options the basic cost comparison was developed using identical construction methods for excavating and dredging for each option without trying to optimize (minimize cost) the construction methods. The following assumptions were made as part of this process and they include the following:

a. An access road (14,000 CY embankment) and loading berm (3,000 CY embankment) would be constructed for the options that involved barging the mitigation material to a disposal site and as needed for other options.

b. Access roads and loading berms are constructed using mitigation material excavated with hydraulic excavators and trucked to the road site in off-road dump trucks. The embankment is placed on filter fabric. Thirty days of maintenance work during construction is assumed. The embankments are removed from the navigation channel side back to the highway using hydraulic excavators and 12 CY highway dump trucks to the material to the Andrews Island disposal site.

c. In-place material is expected to expand 20% for determining haul quantities by barge or truck.

d. One-way haul distances assumed:  
To ocean disposal site = 10 miles.  
To Andrews Island by barge = 9.5 miles

To Andrews Island by truck = 15 miles  
To upland disposal area = 2 miles  
Internal hauls within mitigation area = ¼ mile

- e. Conveyor basic costs from GADOT.
- f. Dredge and landscape contractors are assumed to be subs to the Prime contractor. Base contractor overhead = 20%, profit = 10%. Prime contractor overhead applied to sub contractor = 6%. Prime contractor profit applied to sub contractor = 8%. Project contingencies = 15%.
- g. Mitigation material is assumed to be excavated by scrapers with push dozers for all base options. Material is stockpiled at either the barge site (Options 1, 4 and 6) or near the highway (Options 2 and 3). Material is assumed to be loaded into trucks, barges, or conveyor by wheeled front-end loader.
- h. Special excavation procedures were not estimated for pond and trench construction. Since this is a comparative estimate any change in total cost would be identical for all options. Any cost increase is adequately covered by the contingencies at this time.
- i. All material hauled to the Andrews Island or the upland disposal site will be spread by dozer.
- j. The mitigation area will be rough graded by dozer prior to landscaping.
- k. Landscaping consisting of appropriate trees, shrubs, and grassing will be performed in the mitigation site for all options and the upland disposal site for Option 3.
- l. The base dredge for access channel work is a 10 CY mechanical bucket barge with 3000 CY scows.
- m. No navigation channel work was assumed. Any dredge required to facilitate navigation would need to be added to the appropriate option.
- n. The options that involve trucking the mitigation material to a disposal site include repaving a 0.6-mile portion of public road twice during the project with a 1" asphalt overlay.

To construct Option 4 the mitigation material would be excavated using scrapers and stockpiled near the loading berm. The material would then be loaded onto the barges by wheeled front-end loaders for transport to the Andrews Island disposal site. At the Andrews Island site the material will be pumped from the barges to the Andrews Island Disposal Area.

When the cost of mitigation climbed from \$741,500 to \$4,594,000 in March 2003 with the loss of disposal sites on Jekyll Island and again to \$4,610,000 with a required change in construction methods the Corps became concerned about the constructability of the project. Acting upon these concerns, the Corps, in April 2003, sent out a Request for Information to likely contractors concerning their interest in this project. No responses were received.

In January 2006, in preparation for designing the mitigation site, the Corps (CESAW) conducted a site visit to the mitigation site on Jekyll Island and came to the conclusion that due to the high water table, large range of tides and extremely soft soils at the site, that constructability of the Mitigation Project was of major concern. The construction plan was still Option 4, but site conditions dictated that the work be accomplished by dragline or small dredges, that heavy equipment such as dozers, pans and trucks would not be able to work on the site without mats or haul roads. In March 2006 a new cost estimate for the Jekyll Island Mitigation Plan was developed. The cost for this plan was estimated to be \$10,320,000, over twice the previously estimated cost of \$4,610,000.

With the cost of the Jekyll Island Mitigation Plan now at \$10,320,000 and rising the PDT was convened to determine if there were any alternatives that would reduce the cost of the mitigation plan and/or determine if there was a mitigation site that was less expensive, constructible, and acceptable to the environmental agencies. The PDT re-evaluated all of the original large mitigation sites previously considered in the feasibility study and two additional sites, Little Saint Simons and marsh restoration along Highway 17. These two sites were the result of a Public Notice (April 2004) that modified the Jekyll Island mitigation plan to include ocean disposal. Both of these sites proved unacceptable. With the Little Saint Simons site the contributors valued the site at \$4.5M while Savannah District Real Estate valued it at \$1.5M, which did not include \$3.0M in construction costs. In the case of marsh restoration along Highway 17 the costs related to studying (\$500,000) then constructing this proposal would equal or exceed the Jekyll Island Plan. Further, in March 2006 the PDT reconsidered enlarging and deepening the existing turning basin and developed a mitigation plan for that alternative. After these re-evaluations, the most economical and least environmentally damaging solution considered was determined to be enlarging and deepening the existing turning basin to reduce the amount of wetland acreage destroyed. A further advantage to this alternative was that mitigation could occur adjacent to the site. While the authorized turning basin in the East River would impact of 18.1 acres of wetlands, the proposed modification of the existing turning basin would reduce project wetland impacts to 7.3 acres, or about 40-percent of the original wetland impact.

## **5.2 TURNING BASIN**

The East River has historically been the main economics generator for the Brunswick Harbor project. The existing East River Turning Basin is located practically at the entrance to the East River. The existing turning basin is also in close proximity to strong crosscurrents, which affect ships turning into East river from Brunswick River. The crosscurrent effects a vessel just before it moves into the shadow of Andrews Island during the approach to the basin. This requires the pilots to maintain speed in order to make the northeast turn into East River. Therefore, maneuvering into the turning basin has always been difficult. In addition, following maintenance dredging a shoal develops rapidly on the channel's east side at the entrance to the East River further restricting maneuverability.

During Feasibility Study investigations for providing for a larger turning basin on East River, the only enhancement considered for the existing 1,000-ft-long by 750-ft-wide turning basin was deepening. This was due to the fact that enlarging the turning basin would require the removal of an existing jetty put in place at the turn of the 20<sup>th</sup> century to accrue land at the end of



Andrews Island and to contain dredged materials. It has long been known that any enlargement of the basin would require the removal a portion of the containment dikes and a corresponding loss of capacity at the Andrews Island Disposal Area. In addition, it was believed that the stability of the Andrews Island site would be compromised by removal of the jetty. For these reasons no serious consideration was given to enlarging the existing basin. In preparing this Limited Reevaluation Report, both issues were re-examined and the determination made that no disposal capacity would be lost since the small area in question (9.45 acres) is only being used for a head section location and, in fact, this capacity loss is minimal. As for the stability question associated with the removal of the jetty, additional borings were taken and a geotechnical slope stability analysis was performed with the outcome being that no stability issues were present (Report: Slope Stability East River Turning Basin, East River and Andrews Island, Brunswick, Georgia November 2006). The soils which at one time had been considered to have low shear strength have been over-consolidated by upwards of 35 feet of material for the last 50 years and thus no failure is foreseen from removal of the jetty retaining structure.

For these previously uninvestigated reasons, enlarging the existing turning basin was not previously considered and for the purposes of deepening the harbor, the location of a new turning basin site was a major determinant in the continued viability of East River. The transits of much larger vessels over the 50 years since the last harbor improvement dictated the need for a larger turning basin. Ship simulation studies indicated that without enlargement, the existing turning basin only provided 90 feet of clearance from the East River Terminal Docks for the 660-foot-long design ships being turned and this was inadequate even with no ships at berth across from the basin. By contrast, the proposed new turning basin at 1,100 ft long and 1,100 ft wide provided much greater maneuvering room to turn the 660 ft design vessel.

The PDT reviewed all of the previous reasons for the adoption of an upstream basin and concluded that those reasons were sound, given the information then available. In light of the increased costs of the authorized environmental mitigation and the additional information now available regarding the existing turning basin, however, the PDT found that enlarging the existing turning basin to the same size as the authorized turning basin (1,100-ft-long x 1,100-ft-wide) not only removes the problem with ships docked at the East River terminal by providing 350 feet of clearance as opposed to 90 feet of clearance, but it also reduces the environmental mitigation requirements and the unacceptable risk associated with the mitigation costs at Jekyll Island. The addition of approach transition areas north and south of the turning basin also allows for greater maneuverability for using the turning basin and in fact for the maneuvering of all vessels into the entrance of East River. The Harbor Pilots have indicated that enlarging the existing turning basin and adding transitions provides for their needs as well as the authorized turning basin.

### **5.3 IMPACTS TO MITIGATION PLAN**

In the 1998 Brunswick Deepening FEIS the Corps stated that it expected to impact 1 acre of wetlands from construction of seven new weirs and 2 pipe ramps and 17.1 acres of wetlands due to construction of a new turning basin in East River (total wetland impact of 18.1 acres). This proposed modification of enlarging the existing turning basin reduces project wetland impacts to 5.9 acres for the turning basin construction, 0.4 acres for ditches to the mitigation sites, and 1 acre for construction of new weirs and pipe ramps for a total wetland impact of 7.3 acres, or

about 40 percent of the original wetland impact proposal. The proposed mitigation consists of excavation to restore hammocks designated Areas 2 (0.6 acre), 4 (1.1 acres), 5 (0.3 acre), 6 (0.1), 7 (0.7 acre), 8 (1.1), 10 (1.4 acres), 11 (2.1 acres), 12 (1.1 acres), and J (5.9 acres) to an elevation suitable for natural regeneration by *Spartina* marsh and consistent with the elevation of adjacent existing marsh (+6 ft mlw). A 70-ft wide shelf at marsh level would also be constructed (and marsh grass planted) bordering the edge of the enlarged turning basin to produce a minimum of 2.3 acres of marsh. This results in a total of 16.7 acres. These mitigation areas are shown in Appendix B. The Corps believes, and the agencies concur (Appendix C, EA FONSI), that this adequately compensates for the 7.3 acres of total wetland impact for the project. Monitoring would be as originally proposed.

## 5.4 ECONOMIC CONSIDERATIONS

In discussions with the Harbor Pilots and ERDC it was decided that the design vessel for the East River would be the Star Lines H class vessel (660 feet in length) which was representative of the vessels anticipated to be frequently calling at the Port of Brunswick. One vessel that calls frequently on the East River is the Star Evanger which has a length of 693 feet in length, and at least two other vessels with lengths of 730 feet call 6 to 8 times per year.

There are three terminals on the East River: Lanier Dock, East River Terminal, and Mayor's Point Terminal all of which are served by both Norfolk Southern and CSX railroads. Lanier Dock, the first terminal encountered as you go up the East River, handles bulk cargos such as fertilizer products, salt, perlite, gypsum, and liquid cargos such as petroleum. East River Terminal, located adjacent to and above Lanier Dock, is a modern bulk and break bulk facility. Mayors Point Terminal, the last major docking area along East River, located 15 miles from the sea buoy, handles export forest products such as woodpulp, linerboard, and paper products.

### 5.4.1 Current Economic Situation

The current situation is that tonnage passing through the Port of Brunswick (GPA) has increased over the last three years, after a down year in 2003, while the number of automobiles passing through the port continues to increase at a high rate. Based on these numbers we believe these increases fall in-line with the commodity projections developed for the initial Brunswick Harbor feasibility study.

Based on the tonnages provided by the GPA and depicted in Table 3 below, tonnage for the years 2004 – 2006 average 2.4 million tons while the number of automobiles has increased from 328,051 to 388,475.

**Table 3: Tonnage Passing through GPA Facilities**

	<b>FY 00</b>	<b>FY 01</b>	<b>FY 02</b>	<b>FY 03</b>	<b>FY 04</b>	<b>FY 05</b>	<b>FY 06</b>
<b>Breakbulk</b>	910,694	1,002,720	852,607	912,757	941,881	1,035,479	1,111,892
<b>Bulk</b>	1,460,724	1,481,004	1,573,606	1,248,747	1,343,334	1,259,507	1,447,270
<b>Total</b>	2,371,418	2,483,724	2,426,213	2,161,504	2,285,215	2,294,986	2,559,162
<b>Vessel Count</b>	485	500	520	496	483	452	472
<b>Auto Units</b>	195,187	218,586	251,231	314,625	321,921	328,051	388,475

As of the end of FY 2006 eighty-two (82) percent of the project has been constructed. The remaining funds are for the dredging of the East River, the dredging of the Bar Channel, the construction of a bird island, the construction of the East River Turning Basin, and the construction of the mitigation required for the project. Without these features being constructed, benefits to the project cannot be realized. Table 4 depicts an analysis of the remaining benefits to remaining costs based on a 2006 Price Levels is 3.4 to 1.0.

**Table 4: Remaining Costs versus Remaining Benefits**

DESCRIPTION	FIRST COSTS	ANNUAL COSTS	ANNUAL BENEFITS	BCR
Remaining Project Costs at Current Price Level (2006)	\$29,600,000			
Remaining Interest During Construction at Current Price Level (2006)	\$565,000			
Total Remaining Costs at Current Price Level (2006)	\$30,165,000			
Remaining Costs Deflated to Price Level of Approved Report (2004)	\$28,032,335			
Annualized Remaining Project Costs at 7% Discount Rate (2004)		\$2,032,344		
Total Project Annual O&M at Price Level of Approved Report (2004)		\$170,000		
<b>Total Annual Remaining Costs</b>		<b>\$2,202,344</b>		
Annual Project Benefits from Approved Report 7% Discount Rate			\$7,482,000	
Total Annual Realized Benefits			\$0	
<b>Total Annual Remaining Benefits</b>			<b>\$7,482,000</b>	
<b>RBRC Calculation</b>				<b>3.4</b>
<b>Remaining Average Annual Net Benefits</b>			<b>\$5,279,656</b>	

#### 5.4.2 Changes in the Scope of the Mitigation Plan and Its Impact on Project Economics

Changes in the scope and complexity of the Jekyll Island Mitigation Plan have caused the cost of the plan to increase from \$741,500 to \$10,320,000 since completion of the feasibility study in 1998. In addition to the cost increases, a site visit in January 2006 found that without matting timbers, the soils may not even support the type of equipment needed to construct the mitigation project and that additionally, the disposal of the excavated material is problematic. The PDT determined that by enlarging the original East River Turning Basin rather than constructing a new larger turning basin upstream from it the Corps could reduce the wetland impacts from 18.1 acres to 7.3 acres. This would allow the Corps to move the mitigation site from Jekyll Island to a site adjacent to the Andrews Island Disposal Area and reduce the cost of mitigation to \$2,257,340 as shown in Table 5.

The original bid price for constructing the authorized East River Turning Basin upstream of the original turning basin was \$5,530,000 at FY 02 price levels. This cost at FDY 2006 price levels is \$11,083,350. The cost to enlarge the existing turning basin and add transition areas on the north and south ends of the basin is \$13,014,000 (FY 06 price levels) (see Table 6).

**Table 5: Mitigation Plan Comparison (FY 2006 Price Levels)**

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>Jekyll Island Mitigation Plan</b>				
Excavation of Material (300,000 CY)				
for Marsh Growth	1	LS	\$10,290,000.00	\$10,290,000.00
Monitoring Program	5	Years	\$6,000.00	\$30,000.00
<b>MITIGATION PROJECT</b>				<b>\$10,320,000.00</b>
<b>Proposed Mitigation Plan</b>				
Excavation for Hammock Creation	134,100	CY	\$16.00	\$2,145,600.00
All Over 134,100 cubic yards	1,000	CY	\$16.00	\$16,000.00
Marsh Planting	4	Acre	\$17,300.00	\$65,740.00
Monitoring Program	5	Years	\$6,000.00	\$30,000.00
<b>MITIGATION PROJECT</b>				<b>\$2,257,340.00</b>

While the cost for enlarging the original turning basin and adding transitions on the north and south ends of the turning basin is \$1,930,650 more than building a new turning basin upstream of the original, the savings from revising the mitigation plan from Jekyll Island to a site adjacent to the Andrews Island Disposal Area represents a cost of \$8,062,660. This results in a total project savings of \$6,132,010. There is no accounting of the actual risk involved with the Jekyll Island site so this savings figure is most likely understated.

**Table 6: East River Turning Basin Construction Costs Compared (FY 2006 Price Levels)**

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>Newly Authorized East River Turning Basin</b>				
Unclassified Dredging, up to 1,877,000 CY	1,877,000	CY	\$5.55	\$10,417,000.00
Unclassified Dredging, all over 120,000 CY	120,000	CY	\$5.55	\$666,000.00
<b>TOTAL AUTHORIZED TURNING BASIN</b>				<b>\$11,083,350.00</b>
<b>Enlarged Existing East River Turning Basin</b>				
Excavation Above 0.00 MLLW	480,270	CY	\$5.90	\$2,833,593.00
Excavation 0.0 to -38 (First 1,170,000)	1,170,000	CY	\$5.55	\$6,493,500.00
All over 1,170,000 Cubic Yards	2,000	CY	\$5.55	\$11,100.00
Dredging, Downstream Transition Area	330,000	CY	\$5.55	\$1,831,500.00
All Over 330,000 cubic yards	1,000	CY	\$5.55	\$5,550.00
Dredging Upstream Transition Area	220,400	CY	\$5.55	\$1,223,220.00
All Over 220,400 cubic yards	400	CY	\$5.55	\$2,220.00
Removal of Jetty	1	LS	\$516,700.00	\$516,700.00
Clearing & Grubbing, First 36 Acres	36	Acre	\$2,615.00	\$94,140.00
Clearing, all over 36 Acres	1	Acre	\$2,615.00	\$2,615.00
<b>TOTAL ENLARGING EXISTING TURNING BASIN</b>				<b>\$13,014,138.00</b>

## 5.5 ENGINEERING CONSIDERATIONS

In the Brunswick Harbor Deepening Feasibility Study (May, 1998) the evaluation of what to do with the existing East River Turning Basin consisted of deepening it, but not widening or lengthening it. Widening and lengthening the basin was not considered for two main reasons: 1) there was a rock jetty built on the south end of Andrews Island, to accrete land, that would have to be removed in order to enlarge the turning basin, and 2) enlarging the turning basin would entail pushing back the dikes on the Andrews Island Disposal Area which would have an impact the capacity of the disposal area.

As required by EM 1110-2-1613, the size of a turning basin should provide a minimum turning diameter of a least 1.5 times the length of the design vessel. The EM also states that where traffic conditions permit, the turning basin can utilize the navigation channel as part of the basin. This was the case for both the existing and proposed turning basin designs. The existing turning basin was too narrow (750 feet) for the design vessel (660 feet in length). Final design alternatives included widening the existing turning basin 1,100 feet or constructing a new turning basin upstream that would be approximately 1,100 feet x 1,100 feet.

The selection of the design vessel for the ship simulator study (Technical Report CHL-98-18) was discussed with the Brunswick Pilots, the Waterways Experiment Station, and the District study team. For East River the Star Lines H class vessel (660 feet in length) was selected as representative of the anticipated frequency calling vessels for the with project condition. This was used for the ship simulator study. To ensure that the turning basin would meet the needs of all vessels calling in Brunswick, larger vessels were considered in the turning basin analysis. One vessel that currently calls frequently in East River is the Star Evanger which has a length of 693 feet. At least two other vessels presently call 6 to 8 times per year that have lengths of 730 feet. This 730-foot vessel was used with the 1.5 rule of thumb resulting in a turning basin width of 1,100 feet.

By lengthening and widening the original turning basin to 1,100 feet by 1,100 feet and adding transition areas to the north and south ends of the basin we provide the same maneuvering capabilities to the design vessel as the proposed new turning basin.

Slope stability runs for the proposed new turning basin expansion in the East River, Brunswick, Georgia were completed using UTEXAS4. In general, the overall Factor of Safety (sometimes referred to as global stability) varies between 1.7 and 2.1 for the worst case design cross section. Runs have been completed for the overall case, the upper material between elevation 35 and elevation 6 (bench level) case, and the bench area case.

It should be noted that the stability for the outside edge of the bench area that occurs in the softer OH/MH marsh zone (between about -4 and +6) indicates that certain failures or sloughing should be expected. Without slope protection on the upper area in the vicinity of the tidal zone, sloughing of material is expected to take place over time. A natural stability (defined as having a factor of safety of about 1) should be reached as the upper slope assumes the shape of nearby adjacent slopes in similar material.

## 5.6 OPERATIONS AND MAINTENANCE CONSIDERATIONS

A sedimentation analysis was performed of the existing and with project conditions. A combination of historical shoaling records and numerical modeling was used to estimate shoaling rates. The numerical modeling program called SED2D-WES Version 1.2 Beta (SED2D) was used. SED2D is a generalized computer program for two-dimensional vertically averaged sediment transport in open channel flows. It can be applied to clay or sand bed sediments where flow velocities can be considered two dimensional in the horizontal plane. This model was applied to Brunswick Harbor since this is a well-mixed system and flows can be vertically averaged.

The program does not compute water surface elevations or velocities. This data must be provided from an external calculation of the flow field. For this study, the RMA2 model was used to compute the velocities and water elevations. The same base and plan grids used for the ship simulator study were also used in the sediment model. The hydrodynamic conditions developed for the ship simulator were also used in the sediment model. Detailed information on the hydrodynamic analysis is found in attachment 1A, Brunswick Harbor Ship Simulator Hydrodynamic Study and in Appendix B of the Brunswick Harbor Deepening Feasibility Study (May 1998).

Samples of East River shoal material were collected in 1995. The information from testing of that sediment material was used in developing the input for the SED2D program. The material was determined to be a highly plastic clay (CH) with a water content of 304.3 percent, a liquid limit of 204, and a plastic limit of 50. This is characteristic of the shoal material in Brunswick Harbor.

The results from the hydrodynamic analysis showed that there is essentially no change between the existing conditions (base conditions) and the with project conditions (plan conditions) due to channel deepening. Because there is assumed to be no change in the velocities there is no change in the sediment transport regime. Therefore, there is no anticipated change to the shoaling rates for Brunswick Harbor. The only changes that will occur to shoaling volumes will be due to changes in channel area. Expanding the existing East River Turning Basin will expand the turning basin by a factor of 1.6. This will result in an increase in maintenance dredging quantities in this area from 140,000 cubic yards per year to 226,000 cubic yards per year as shown in Table 7.

**Table 7: Estimated Total Annual Differential Maintenance Dredging Quantities Resulting from Deepening**

Location	Existing Project (cy/yr)	Authorized -36-foot Project	-36-foot Project Expanding the Existing Turning Basin
East River Lower Range	480,000	580,000	480,000
Existing East River Turning Basin	140,000	N/A	226,000
New East River Turning Basin	N/A	10,000	N/A
East River Upper Range	10,000	40,000	10,000
Total for East River	630,000	630,000	716,000

By constructing the authorized turning basin in the East River (and de-authorizing the existing East River Turning Basin) you increase shoaling in the East River Lower Range by 100,000 cubic yards, shoaling in the East River Upper Range by 30,000 cubic yards, and shoaling in the area of the authorized East River Turning Basin by 10,000 cubic yards. However, shoaling quantities for the entire East River basin area remain the same for both scenarios.

By increasing the size of the existing East River Turning Basin and not constructing the authorized East River Turning Basin the shoaling conditions will shift back to the Existing Project conditions with some of the dredging quantities shifting from the East River Lower Range to the existing East River Turning Basin simply because its area has increased. The increased O&M material in the turning basin will result in lower overall O&M costs because the turning basin is closer to the disposal area resulting in a shorter pumping distance for disposal of the O&M dredged material.

## 5.7 AVERAGE ANNUAL COSTS

**Table 8: Average Annual Costs**

DESCRIPTION	TOTAL PROJECT COST	AVERAGE ANNUAL COSTS (DISCOUNT RATE = 4.875% FOR 50 YRS)
Authorized Turning Basin With Jekyll Island Mitigation Plan	\$21,403,350	\$1,149,837
Expand Existing Turning Basin with New Mitigation Plan	\$15,271,478	\$820,419

This represents a savings of \$16,470,000 (\$329,400 per year X 50 years) for the 50 year life of the project.

## 6.0 ENVIRONMENTAL IMPACTS AND COMPLIANCE

**Wetland Compliance:** The “Standard Operation Procedure for Calculating Compensatory Mitigation Requirements for Adverse Impacts to Wetlands, Open Waters and/or Streams” has been used in determining the size of the proposed mitigation plan.

### 6.1 ADVERSE IMPACT FACTORS AND REQUIRED MITIGATION CREDITS

#### 6.1.1 Dominant Effect

Construction of the turning basin (enlargement of the existing turning basin) will require excavation of 5.9 acres of wetlands. This requires a factor of 1.8 (dredge). Approximately 0.4 acres of ditches through high marsh will be required to ensure adequate hydrology for the restored wetlands. This requires a factor of 1.8 (dredge). Up to 1 acre of wetlands may be impacted by fill from pipe ramp and weir construction. This requires a factor of 2.0 (fill).



### **6.1.2 Duration of Effect**

These effects are expected to be essentially permanent and require a factor of 2.0 (greater than 7 years).

### **6.1.3 Existing Condition.**

Wetlands to be impacted consist primarily of short-form *Spartina alterniflora*, with a small amount of tall form near the river. On the upland side, there is typical high marsh vegetation from *Iva* to *Salicornia*, and small patches of unvegetated areas. A large amount of accumulated debris is also present in the vegetation. This vegetation exists as a wetland fringing the edge of a highly maintained navigation channel within a commercial harbor.

The salt marsh that would be impacted forms a narrow band along the bank of the East River in Brunswick. A port facility and industrial area exists on the opposite bank. Since this marsh is relatively small, exists along an industrialized river, and has had some fill placed in parts of it in the past, it would not be considered fully functional (Class 1, with a factor of 2.0). For the most part, it could be expected to assume a fully functional condition, were its surroundings to revert to a pristine condition. The most appropriate class appears to be Class 2 (factor of 1.5).

Definitions from SOP.

Class 1 means fully functional. For example: Mixed species hardwood forest with 40-year old or older dominant canopy trees, and no evidence of hydrologic alteration (2.0 impact factor).

Class 2 means adverse impacts to aquatic function are minor and would fully recover without assistance. For example: Mixed species hardwood forest with 20 to 40-year old dominant canopy trees, and no evidence of hydrologic alteration (1.5 impact factor).

Class 3 means adverse impacts to aquatic functions are minor and would not fully recover without some minor enhancement activity. For example, mixed species 10 to 20-year old hardwoods with evidence of minor hydrologic alteration (i.e., few shallow ditches)(1.0 impact factor).

### **6.1.4 Lost Kind**

Kind A includes intertidal wetlands, the type of wetlands that would be impacted by this project (2.0 impact factor).

### **6.1.5 Preventability**

The new proposal to enlarge the existing turning basin in East River rather than construct a new turning basin upstream of the existing one was specifically designed to minimize potential environmental impacts. It is clear that because of the effort that has gone into finding an alternative and mitigation plan that fits the project requirements, there will be no known alternatives which satisfy the purpose, are practicable, and are less damaging (whichever construction alternative is chosen). This corresponds to the definition of low preventability (0.5 impact factor) “low means there are no known alternatives which satisfy the purpose, are practicable, and are less damaging”.

### 6.1.6 Rarity Ranking

We believe that saltmarshes in Georgia meet the definition for uncommon (see below), if the whole state is considered (since they would be encountered commonly only on the coast, and have exceptional quality). Therefore, we believe a strict interpretation of the SOP indicates that the marshes to be impacted should be assigned a factor of 0.5. However, we understand from prior negotiations that the agencies have taken the position that saltmarsh in Georgia is “rare”. We will not contest this ranking at the present time and have assigned a value of 2.0 for rarity ranking in the “required mitigation credits worksheet”.

Definitions from SOP.

Rare. Rare means that the designated category is seldom occurring and is marked by some special quality. (2.0 impact factor)

Uncommon. Uncommon means that the designated category is not ordinarily encountered or is of exceptional quality (underline added). (0.5 impact factor)

### 6.1.7 Sum of Factors

The sum of r factors for the turning basin impacts is 9.8 (5.9 acre impact). This is also the sum for required ditches for the mitigation sites (0.4 acre impact). The sum for required ramps and weirs is 10.0 (1.0 acre impact).

### 6.1.8 Required Credits

Total required credits is 71.7.

## 6.2 RESTORATION/ENHANCEMENT MITIGATION FACTORS AND TOTAL CREDITS TO BE PRODUCED

### 6.2.1 Net Improvement Vegetation

Factors range from Minimal Enhancement (0.1) to Complete Restoration (1.4).

### 6.2.2 Baseline Assessment

The mitigation sites consist mostly of mounds of dredged material that were placed in salt marsh many years ago. This dredged material placement removed all wetland characteristics from the sites. There is no evidence of tidal influence, standing water, or other hydrological indicators. Current vegetation on the mitigation sites consists primarily of small trees and shrubs and little understory or herbaceous layer. Species include primarily juniper, wax myrtle, pine, yaupon, salt cedar, sabal palmetto, yucca, hackberry, and *Opuntia* sp. The boundaries of these upland areas grade into surrounding wetlands through a series of vegetation changes that grade from high marsh vegetation to *Spartina alterniflora* marsh as the elevations decrease. The uplands provide little wetland functional value. A few herons were found roosting at one of the sites, but no evidence of nesting was found. One mound that was considered as a potential restoration site and rejected was Area 3. Although this mound had areas of high ground, there were spots throughout the site where there either standing water or other evidence of wetland hydrology.

### **6.2.3 Proposed Condition**

The mitigation plan calls for the upland areas to be cleared and the sites excavated to the elevation of adjacent *Spartina alterniflora* marsh. The high marsh areas surrounding these sites would for the most part be left undisturbed, except where ditching is deemed necessary to enhance the hydrology of the areas. It is expected that these cleared areas would be readily naturally revegetated by *Spartina alterniflora*. This vegetation change from an entirely upland system to that of a *Spartina alterniflora* salt marsh would provide the vegetation functional lift. No upland buffers would be present, except for the “shelf” acreage at the edge of the turning basin. In that case, the shelf would be bounded by the toe of the Andrews Island dike. Once the new dike slope has been established, dike surface will be stabilized with vegetation. No development on the slope would occur. The dike slope vegetation would function as an upland buffer.

Monitoring would occur as originally proposed in the wetland mitigation plan in the Brunswick Harbor Deepening EIS and necessary steps would be taken to ensure that this valuable vegetation returns to the mitigation sites and the Project fulfills its mitigation commitment (the monitoring plan is detailed at page 17 of Enclosure B, Wetland Mitigation Plan, of the Final EIS). This should result in complete restoration of saltmarsh vegetation (1.4 factor).

### **6.2.4 Net Improvement Hydrology**

Factors range from Minimal Enhancement (0.1) to Complete Restoration (1.4).

The sites currently have no indication of wetland hydrology or tidal influence. The sites would be excavated to the elevation of adjacent *Spartina alterniflora* marsh. In addition, ditches would be cut to the sites through adjacent high marsh where necessary to ensure daily tidal flushing of the sites. This should result in complete restoration of tidal hydrology.

### **6.2.5 Credit Schedule**

Mitigation would be constructed concurrent with the impacts. This corresponds with Schedule 3 (0.2 credit factor).

### **6.2.6 Kind**

The proposed plan would replace the impacted aquatic site (tidal wetland community that is primarily *Spartina alterniflora* marsh) with one of the same hydrologic regime and plant community type (tidal *Spartina alterniflora* marsh). This corresponds to Category 1, or In-kind (0.6 credit factor).

### **6.2.7 Maintenance**

No maintenance is anticipated. The East River is not a true riverine water body as the currents are minimal due to the lack of an upstream outlet. The ship traffic moves at such a slow velocity that pressure wave, drawdown and bow wake influence on bank erosion are minimal. The mitigation area is expected to continue developing into the preferred habitat (*Spartina alterniflora* marsh) without any human intervention after the monitoring period is complete. This corresponds to “none” (0.3 credit factor).

### **6.2.8 Monitoring and Contingencies Plan**

The proposed Monitoring and Contingencies Plan consists of the following factors. These factors coincide with the “Moderate Level Monitoring” (0.2 credit factor).

- At least 5 years of monitoring.
- Vegetation survival monitoring (including a commitment to replant if success is not achieved)
- Basic hydrological monitoring
- Collection of suitable baseline data.

### **6.2.9 Control**

A restrictive covenant (RC) and Government/Public Protection will be placed on the restored dredge hammock sites (14.4 acres) (0.4 impact factor). The property owner (Georgia Department of Transportation) will sign the agreements once the work is completed and the actual metes and bounds have been determined. It is understood that the easement is perpetual.

For the shelf of marsh that would border the new turning basin (2.3 acres) we have determined that it would not be in the federal interest to place a restrictive covenant on this area. This could impair the federal government’s ability to do its job, if for instance, a need is found in the future to expand the turning basin again. Therefore, a factor zero (0.0 impact factor) is applied to this acreage (2.3 acres).

Recognizing that the marsh fringe (2.3 acres) would be a wetland mitigation site, we agree that should impacts to this mitigation acreage become necessary in the future, mitigation will be required at twice its value (4.6 acres). Furthermore, the 2.3 acres of wetland mitigation will be clearly marked on project drawings to ensure this commitment is recognized in the future.

### **6.2.10 Sum of m factors**

The sum of factors for the “mound” mitigation acreage is 4.5 (14.4 acre mitigation area). The sum of factors for the “shelf” mitigation acreage is 4.1 (2.3 acre shelf area).

### **6.2.11 Total Restoration/Enhancement Credits**

Total restoration/enhancement credits are 74.2, compared to 71.7 required credits.

**Table 9: Adverse Impact Factors**

FACTOR	OPTIONS						
Dominant Effect	Fill 2.0	Dredge 1.8	Impound 1.6	Drain 1.4	Flood 1.2	Clear 1.0	Shade 0.5
Duration of Effects	7+ years 2.0	5-7 years 1.5	3-5 years 1.0	1-3 years 0.5	< 1 year 0.1		
Existing Condition	Class 1 2.0	Class 2 1.5	Class 3 1.0	Class 4 0.5	Class 5 0.1		
Lost Kind	Kind A 2.0	Kind B 1.5	Kind C 1.0	Kind D 0.5	Kind E 0.1		
Preventability	High 2.0	Moderate 1.0	Low 0.5	None 0			
Rarity Ranking	Rare 2.0	Uncommon 0.5	Common 0.1				

† These factors are determined on a case-by-case basis.

**Table 10: Required Mitigation Credits**

FACTOR	AREA 1 TURNING BASIN	AREA 2 DITCHES IN MITIGATION AREA	AREA 3 RAMPS/ WEIRS	AREA 4	AREA 5	AREA 6
Dominant Effect	1.8	1.8	2			
Duration of Effect	2	2	2			
Existing Condition	1.5	1.5	1.5			
Lost Kind	2	2	2			
Preventability	0.5	0.5	0.5			
Rarity Ranking	2	2	2			
Sum of r Factors	R <sub>1</sub> = 9.8	9.8	R <sub>3</sub> = 10	R <sub>4</sub> =	R <sub>5</sub> =	R <sub>6</sub> =
Impacted Area	AA <sub>1</sub> = 5.9	AA <sub>2</sub> = 0.4	AA <sub>3</sub> = 1	AA <sub>4</sub> =	AA <sub>5</sub> =	AA <sub>6</sub> =
R × AA =	57.82	3.92	10			

**Total Required Credits =  $\sum (R \times AA) =$**

**71.7**

**Table 11: Restoration/Enhancement Mitigation Factors**

<b>Factor</b>	<b>Options</b>				
Net Improvement Vegetation	Minimal Enhancement 0.1 ----- to ----- Complete Restoration 1.4				
Net Improvement Hydrology	Minimal Enhancement 0.1 ----- to ----- Complete Restoration 1.4				
Credit Schedule	Schedule 5 0	Schedule 4 0.1	Schedule 3 0.2	Schedule 2 0.3	Schedule 1 0.4
Kind	Category 2 0.2	Category 1 0.6			
Maintenance	High 0	Moderate 0.1	Low 0.2	None 0.3	
Monitoring and Contingencies Plan	N/A 0	Minimum 0.1	Moderate 0.2	Substantial 0.3	Excellent 0.4
Control	RC 0.1	RC + CE or GPP	RC + CE + GPP		

**Table 12: Proposed Restoration/Enhancement Mitigation Worksheet**

<b>FACTOR</b>	<b>AREA 1 RESTORED MOUNDS</b>	<b>AREA 2 60-FT SHELF</b>	<b>AREA 3</b>	<b>AREA 4</b>	<b>AREA 5</b>
Net Improvement Vegetation	1.4	1.4			
Net Improvement Hydrology	1.4	1.4			
Credit Schedule	0.2	0.2			
Kind	0.6	0.6			
Maintenance	0.3	0.3			
Monitoring and Contingencies Plan	0.2	0.2			
Control	0.4	0			
Sum of m Factors	$M_1 = 4.5$	$M_2 = 4.1$	$M_3 =$	$M_4 =$	$M_5 =$
Mitigation Area	$A_1 = 14.4$	$A_2 = 2.3$	$A_3 =$	$A_4 =$	$A_5 =$
$M \times A =$	64.8	9.43			

**Total Restoration/Enhancement Credits =  $\sum (M \times A) =$**  **74.2**

**Table 13: Buffer Mitigation Factors**

Mitigation Summary Worksheet For Brunswick Deepening Modification		
I. Required Mitigation		
A. Total Required Mitigation Credits =	71.7	
II. Mitigation Credit Summary		
	Credits	Acres
B. Mitigation Bank		
C. Restoration and/or Enhancement	74.2	16.7
D. Creation		
E. Functional Replacement Mitigation = B + C + D	74.2	16.7
F. Upland Buffer		
G. Preservation		
H. Total Proposed Non-Bank Mitigation = E + F + G	74.2	16.7

## 7.0 CHANGES IN PROJECT PURPOSE

The project purpose is navigation and remains unchanged.

## 8.0 CHANGES IN LOCAL COOPERATION REQUIREMENTS

The PCA (Appendix A) will be amended IAW this GRR in the sections that discuss the overall cost of the project, the non-Federal sponsor's contribution, and the maximum cost of the project.

## 9.0 CHANGES IN LOCATION OF PROJECT

The mitigation site will be moved off of Jekyll Island to a site adjacent to the Andrews Island Disposal Area. Moving the site will lead to a significant decrease in mitigation costs since enlarging the existing turning basin will result in impacts to only 7.3 acres of wetlands as opposed to 18.1 acres of wetlands impacted by constructing a new turning basin in the currently authorized location. This will require wetland mitigation of 16.7 acres as opposed to 59 acres for constructing the new turning basin as currently authorized in the upper East River.

## 10.0 DESIGN CHANGES

Design changes consisted of enlarging the existing East River Turning Basin to 1,100-ft-long x 1,100-ft-wide and adding transition areas on the north and south ends of it rather than constructing a new turning basin. This results in a reduction of the wetland mitigation requirement from 18.1 acres to 7.3 acres. This allows the Corps to perform the mitigation required by converting hammocks built on spoil islands adjacent to the enlarged East River Turning Basin to *Spartina* marsh. This puts the mitigation within the watershed basin rather than



outside the basin as was the case when the mitigation was on Jekyll Island. Cost estimates are based on placing the material to be excavated from the mitigation sites in Andrews Island.

## 11.0 CHANGES IN TOTAL PROJECT FIRST COSTS

WRDA 1999 authorized the 36-foot project at a cost of \$50,717,000. A PAC report dated September 2003 revised the project cost to \$96,277,000 based on October 2003 price levels. This change raised the proposed fully funded cost to \$101,581,000 including inflation through the construction period and raised the Section 902 limit to \$120,837,000. Table 7 summarizes the price changes by feature, while Table 8 summarizes the costs by decision document and major funding level.

**Table 14: Changes in Project Costs By Feature Code  
(From WRDA 99 Authorized Project)**

FEATURE	FEATURE DESCRIPTION	WRDA 99 AUTHORIZED PROJECT (1 OCT 98 PRICE LEVEL)	UPDATED AUTHORIZED PROJECT COST (1 OCT 03 PRICE LEVEL)	FULLY FUNDED PROJECT COST
12	Navigation, Ports & Harbors	\$44,927,000	\$83,152,000	\$87,814,000
01	Lands & Damages	\$27,000	\$50,000	\$50,000
06	Wetland Mitigation	\$720,000	\$5,763,000	\$6,242,000
30	Planning, Engineering, & Design	\$2,186,000	\$4,349,000	\$4,349,000
31	Construction Management	\$2,857,000	\$2,963,000	\$3,126,000
<b>Totals</b>		<b>\$50,717,000</b>	<b>\$96,277,000</b>	<b>\$101,581,000</b>

Navigation Cost based on CWCCIS

Real Estate based on CPI (similar to 902 limit criteria)

**Table 15: Summary of Costs  
by Decision Document and Major Funding Level**

REPORT/ACTION ITEM	AUTHORIZED PROJECT COST <sup>1</sup>	FULLY FUNDED PROJECT COST <sup>2</sup>	MAXIMUM PROJECT COST/ SECTION 902 LIMIT <sup>3</sup>
<b>Feasibility Report</b>	<b>\$50,717,000</b>	<b>\$53,345,000</b>	<b>\$63,488,000</b>
(Federal Cost)	(\$32,915,800)	(\$34,674,000)	
(Non-Federal Cost)	(\$17,801,200)	(\$18,671,000)	
<b>Revised PAC</b>	<b>\$96,277,000</b>	<b>\$101,581,000</b>	<b>\$120,837,000</b>
(Federal Cost)	(\$61,709,600)	(\$65,109,000)	
(Non-Federal Cost)	(\$34,567,400)	(\$36,472,000)	

<sup>1</sup> **Authorized Project Cost**-Dollar Value of Project Approved by Congress. Price Level at Which Benefits and Costs are Compared.

<sup>2</sup> **Fully Funded Project Cost**-Dollar Value of Project that Includes Inflation through the Midpoint of Construction.

<sup>3</sup> **Estimated Section 902 Limit**-Forecasted Total Value of Project that can be Legally Expended. Derived by Adding the Fully Funded Project Cost + 20% of the Authorized Project Cost.

## **12.0 CHANGES IN COST ALLOCATION**

All costs are still allocated to navigation; therefore, there is no change in cost allocation.

## **13.0 CHANGES IN COST APPORTIONMENT**

The Federal share of 65 percent and non-Federal share of 35 percent of the General Navigation Features (GNF) remain unchanged. Table 16 compares the authorized project cost at October 1998 price levels against the authorized project cost at October 2003 price levels. However, when costs for navigation aids and dredging of berthing areas are added, the Federal share of total project costs (\$61,709,600) does go down from 65 percent to 64.1 percent, and the non-Federal share (\$34,567,400) increases slightly from 35 percent to 35.9 percent

## **14.0 VALUE ENGINEERING**

The Brunswick Harbor Deepening Project underwent two separate Value Engineering (VE) studies in 1998 and 1999, per ER 11-1-321 which requires that all Civil Works decision documents (feasibility reports, post authorization change reports, general reevaluation reports, and the equivalent) contain a review and approval statement from the PM indicating that the required VE action has been completed, as appropriate, for that phase of the project.

This Limited Reevaluation Report was reviewed by a VE study team organized by the Value Engineering Officer. The results of the study are shown in Appendix C.

**Table 16: Cost Sharing Distribution for Authorized Project at October 1998 and October 2003 Price Levels**

Item	AUTHORIZED PROJECT (OCT 98 PRICE LEVEL)			AUTHORIZED PROJECT (OCT 03 PRICE LEVEL)		
	Total	Federal	Non-Federal	Total	Federal	Non-Federal
<b>General Navigation Features</b>						
(12) Construction Dredging	\$44,689,000.00			\$81,649,000.00		
(06) Wetland Mitigation	\$720,000.00			\$5,763,000.00		
(30) Planning, Engineering & Design	\$2,186,000.00			\$4,349,000.00		
(31) Construction Management	\$2,857,000.00			\$2,963,000.00		
Subtotal General Navigation Features	\$50,452,000.00	\$37,839,000.00	\$12,613,000.00	\$94,724,000.00	\$71,043,000.00	\$23,681,000.00
<b>Aids to Navigation</b>	\$95,000.00	\$95,000.00	\$0.00	\$89,000.00	\$89,000.00	\$0.00
<b>(12)Berthing Areas<sup>4</sup></b>	\$143,000.00	\$0.00	\$143,000.00	\$1,414,000.00	\$0.00	\$1,414,000.00
<b>LEERDs</b>						
(01) Lands and Damages	\$27,000.00			\$50,000.00		
Total LEERDs	\$27,000.00	\$0.00	\$27,000.00	\$50,000.00	\$0.00	\$50,000.00
<b>Additional Funding Requirements</b>						
10 Percent Total GNF <sup>5</sup>						
Actual Cost and Adjustment for LEERDs <sup>6</sup>						
Net Additional Funding Requirements <sup>7</sup>		(\$5,018,200.00)	\$5,018,200.00		(\$9,422,400.00)	\$9,422,400.00
<b>FINAL FIRST COST REQUIREMENTS</b>	<b>\$50,717,000.00</b>	<b>\$32,915,800.00</b>	<b>\$17,801,200.00</b>	<b>\$96,277,000.00</b>	<b>\$61,709,600.00</b>	<b>\$34,567,400.00</b>

<sup>4</sup> Berth dredging costs increased substantially due to revised CEDEP estimate which yielded higher costs for a large 30-in rock capable hydraulic dredge in addition to a booster pump.

<sup>5</sup> Non-federal adjustment for additional 10% of Recommended Plan's Total General Navigation Feature (GNF).

<sup>6</sup> The value of lands, easements, rights-of-way, and relocation provided are credited towards the 10% additional non-federal cost share to be paid in cash over a period not to exceed 30 years.

<sup>7</sup> The final net adjustment for the additional requirements reduces the Federal funding requirement by \$5,018,200 and increases the non-federal funding by \$5,018,200 for the authorized project (WRDA 99). For the new recommended project the differential is a \$9,422,400 increase for the non-Federal and a similar decrease for the Federal share. There is a larger charge since project costs have increase substantially.

## **15.0 ENVIRONMENTAL CONSIDERATIONS IN RECOMMENDED CHANGES**

Environmental considerations for the deepening project were addressed in the March 1998 Final EIS and Record of Decision signed on 12 May 1999. Since that time several proposed modifications have been issued for public review, the latest being an April 2004 draft EA for “Proposed Modification of the Wetland Mitigation Plan”. Review of comments received on the draft EA and cost projections led to a decision to consider the further modification to the project to reduce potential wetland impacts and required wetland mitigation. The selected alternative includes a change in design and location of the East River Turning Basin back to its original location and the movement of the mitigation plan from Jekyll Island to an area adjacent to the Andrews Island Disposal Area. This plan involves excavation to marsh level of old dredged material mounds along the east end of Andrews Island outside the existing confined disposal facility (CDF) dikes and adjacent to the dredging (impact) area.

This modification of the Brunswick Harbor Deepening Project to include enlargement of the existing East River Turning Basin, rather than construction of a new turning basin, reduces proposed wetland impacts from 18.1 acres to 7.3 acres, reduces wetland mitigation requirements from 59.4 acres to 16.7 acres, and provides for onsite mitigation. Furthermore, acres of disturbed Waters of the U.S. is essentially the same under the current proposal (31.1 acres) as compared to the original plan (31.4 acres) but the created Waters of the U.S. increase markedly from 2.2 acres under the old plan to 15.2 acres under the new plan. These figures do not include the wetland mitigation plan.

The Corps believes the selection of this new alternative can be considered a minor modification since it reduces overall environmental impacts. Furthermore, it is the Corps’ intention that the April 2004 draft EA for this project be finalized by including the proposed modifications as the selected alternative. That EA is included as an appendix to this report. The new alternative and our proposed determination of it as a minor modification to be included in the Final EA were coordinated with the resource agencies by emails dated April 27, 2006, and September 20, 2006. Environmental considerations are discussed in detail in the EA appended to this report. Major environmental considerations are summarized below.

An Essential Fish Habitat Assessment for this proposed modification is included as an appendix to this EA. The NMFS Habitat Conservation Office approved of the turning basin expansion, with no need for further assessment of EFH, by email on October 3, 2006.

Endangered Species Act. Federally listed threatened and endangered sea turtles and the Florida manatee occur in the project area, especially when water temperatures are at or above 14 degrees Celsius (C). Conditions are currently in place for the Deepening Project activities to protect endangered species. These conditions are adequate to protect endangered species from the additional proposed activities. No additional effects are expected. Concurrence was received from the National Marine Fisheries Service (NMFS) by email from Eric Hawk dated October 2, 2006 and from the USFWS by letter from Sandra S. Tucker dated November 28, 2006.

Water Quality impacts are addressed in the Section 404(b)(1) Evaluation for this proposed work (included as an appendix to the EA appended to this report). The proposed minor additional dredging is not expected to have significant impacts beyond those already addressed. By email dated December 13, 2006, the GADNR stated “The Georgia EPD issued an initial Section 401 Water Quality Certification for deepening the Brunswick Harbor on January 30, 2002. Since that time, EPD has issued three modifications for various changes in the deepening project via Section 401 Certifications. The present request for modification for changes in the East River Turning Basin has been reviewed by this office with coordination with the DNR, Coastal Resources Division. It is the determination of this office that the proposed changes are minor in nature and result in actual reduced impacts of the overall project. Subsequently, the existing Water Quality Certification shall remain in effect, as will any pertinent condition of the previously issued modifications.”

Cultural Resources. A cultural resource survey of the mitigation site is planned for the near future. The results of that survey will be coordinated with the Georgia State Historic Preservation Officer and any potential impacts will be addressed.

GADNR Coastal Zone Consistency. A Coastal Zone Consistency Determination from the Georgia Coastal Zone Management Program is included in the FEIS for the deepening project. We provided an additional Consistency Determination to address the proposed modifications. We received a number of technical comments and questions by letter dated May 28, 2004, from the Director, Coastal Resources Division, concerning our Federal Consistency Determination. These questions involved primarily potential trucking impacts to Jekyll Island, potential marsh impacts, and the proposals to construct temporary dock facilities at the Jekyll Island site. Our proposal to enlarge the existing turning basin in East River greatly reduces potential marsh impacts by the project and eliminates proposed mitigation at Jekyll Island. We have finalized the Federal Consistency Determination to reflect our revised proposal. By email dated 13 Dec 2006, GADNR stated the East River Turning Basin modification is covered by the original project Consistency Determination.

EPA Clean Air Act. We received early comments from the wetlands section of EPA regarding various aspects of the mitigation plan. These were resolved with adoption of the proposed modifications. EPA voiced no objection provided by teleconference dated 6 October 2006.

USFWS, NMFS, GADNR Fish and Wildlife Coordination Act. The draft EA stated that no separate report was deemed necessary. Draft EA and proposed modification were coordinated with the GA Dept. of Natural Resources, as well as the USFWS and NMFS. No objections were received.

## **16.0 RECOMMENDATIONS**

In view of (1) the District’s need to fulfill commitments made in the project authorization documents, (2) the environmental and cost savings benefits that would result from the implementation of these modifications, (3) the environmental agencies support for these changes, and (4) the sponsor’s support for their implementation I recommend that the Brunswick Harbor Deepening Project be modified as described previously to include reauthorizing the original East

River Turning Basin and enlarging it to 1,100-ft-long x 1,100-ft-wide x 36-ft-deep with transition area on both the north and south end of the basin and modifying the mitigation plan from the Jekyll Island site to and area adjacent to the Andrews Island Disposal Area.

# APPENDIX A

AMENDMENT NO. 1  
TO  
PROJECT COOPERATION AGREEMENT  
BETWEEN  
THE DEPARTMENT OF THE ARMY  
AND  
THE GEORGIA DEPARTMENT OF TRANSPORTATION  
FOR CONSTRUCTION OF THE  
BRUNSWICK HARBOR DEEPENING PROJECT

THIS AMENDMENT is entered into on the 30<sup>th</sup> day of July 2004, 2004, by and between the Department of the Army (hereinafter the "Government"), represented by the "U.S. Army Engineer, Savannah District (hereinafter the "District Engineer")", and the Georgia Department of Transportation (hereinafter the "Non-Federal Sponsor"), represented by the Commissioner of the Non-Federal Sponsor.

WITNESSETH, THAT:

WHEREAS, the parties entered into a Project Cooperation Agreement on the 5<sup>th</sup> day of April, 2002;

WHEREAS, Section 902 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, established the maximum authorized project cost:

WHEREAS, pursuant to The Energy and Water Development Appropriations Act, 2004, Public Law 108-137, section 149, the authorized project cost has been increased;

NOW, THEREFORE, the Government and the Non-Federal Sponsor agree as follows:

1. ARTICLE II - OBLIGATIONS OF THE GOVERNMENT AND THE NON-FEDERAL SPONSOR, paragraph A.3. is amended as follows:

3. Notwithstanding paragraph A.1. of this Article, if the award of any contract for construction of the general navigation features would result in total cost of construction of the general navigation features exceeding \$99,944,000, the Government and the Non-Federal Sponsor agree to defer award of that contract and all subsequent contracts for construction of the general navigation features until such time as the Government and the Non-Federal Sponsor agree to proceed with further contract awards for the general navigation features, but in no event shall the award of contracts be deferred for more than three years. Notwithstanding this general provision for deferral of contract awards, the Government, after consultation with the Non-Federal Sponsor, may award a contract or contracts after the Assistant Secretary of the Army (Civil Works) makes a written determination that the award of such contract or contracts must proceed



in order to comply with law or to protect human life or property from imminent and substantial harm.

2. ARTICLE VI - METHOD OF PAYMENT, paragraph A is amended as follows:

A. Until the Government furnishes the Non-Federal Sponsor with the results of the final accounting, the Government shall maintain current records of contributions provided by the parties and current projections of the total cost of construction of the general navigation features and costs due to additional work under Article II.B., II.D., II.N., or II.O. of this Agreement. At least quarterly during the period of construction and during each subsequent period of construction, if applicable, the Government shall provide the Non-Federal Sponsor with a report setting forth all contributions provided to date and the current projections of the total cost of construction of the general navigation features, of total costs due to additional work under Article II.B., II.D., II.N., or II.O. of this Agreement, of the maximum amount determined in accordance with Article XXI of this Agreement, of the Non-Federal Sponsor's total contributions required in accordance with Articles II.B., II.D., II.G., II.N., and II.O. of this Agreement, of the non-Federal proportionate share, of the funds required from the Non-Federal Sponsor for the upcoming fiscal year, of the credit to be afforded pursuant to Article II.I. of this Agreement for the value of lands, easements, rights-of way, or relocations contributed before the end of the period of construction and during any subsequent period of construction, of the 10 percent amount, of the principal amount, and of the installments to be paid in accordance with paragraph E.2. of this Article. Thereafter, until the outstanding portion of the principal amount equals \$0, the Government, at least annually, shall provide the Non-Federal Sponsor with a report setting forth the outstanding portion of the principal amount and the current projection of the remaining installments to be paid in accordance with paragraph E.2. of this Article. On the effective date of this Amendment to the Project Cooperation Agreement, the total cost of construction of the general navigation features is projected to be \$99,944,000, and the Non-Federal Sponsor's contribution required under Article II.G. of this Agreement is projected to be \$36,473,400.00. These amounts are subject to adjustment by the Government, after consultation with the non-Federal Sponsor, and are not to be construed as the total financial responsibilities of the Government and the Non-Federal Sponsor.

3. ARTICLE XXI - SECTION 902 PROJECT COST LIMITS is amended as follows:

The Non-Federal Sponsor has reviewed the provisions set forth in Section 902 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, and understands that Section 902 establishes the maximum cost of the Project and the local service facilities. Notwithstanding any other provision of this Agreement, the Government shall not make a new Project financial obligation, make a Project expenditure, or afford credit toward total cost of construction of the general navigation features for the value of any contribution provided by the Non-Federal Sponsor, if such obligation, expenditure, or credit would result in the total cost of construction of the

general navigation features plus the value of any contribution provided by the Non-Federal Sponsor in accordance with Article III of this Agreement exceeding this maximum amount, unless otherwise authorized by law. On the effective date of this amendment to the Projected Cooperation Agreement, this maximum amount is estimated to be \$120,837,000.00, as calculated in accordance with ER 1105-2-100 using October 1, 2003 price levels and allowances for projected future inflation. The Government shall adjust this maximum amount in accordance with Section 902 of the Water Resources Development Act of 1986, Public Law 99-662, as amended.

4. All other terms and conditions of the Project Cooperation Agreement shall remain the same.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment, which shall become effective upon the date it is signed by the District Engineer, Savannah District.

DEPARTMENT OF THE ARMY

BY: Mark S Held  
Mark S. Held  
Colonel, US Army  
District Engineer

DATE: 30 July 2004

GEORGIA DEPARTMENT OF  
TRANSPORTATION

BY: Harold E. Linnenbohl  
for Harold E. Linnenbohl  
Commissioner  
State of Georgia,  
Department of Transportation

DATE: July 27, 2004

## CERTIFICATION REGARDING LOBBYING

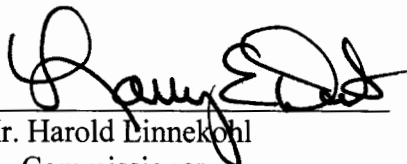
The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, "Disclosure form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

  
For Mr. Harold Linnekohl  
Commissioner

State of Georgia, Department of Transportation

DATE: July 27, 2004

## CERTIFICATE OF AUTHORITY

I, Sandra Story Burgess, do hereby certify that I am the principal legal officer of the Georgia Department of Transportation, that the Georgia Department of Transportation is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the Department of the Army and the Georgia Department of Transportation in connection with the Brunswick Harbor Deepening Project, and to pay damages in accordance with the terms of this Agreement, if necessary, in the event of the failure to perform, as required by Section 221 of Public Law 91-611 (42 U.S.C. Section 1962d-5b), and that the persons who have executed this Agreement on behalf of the Georgia Department of Transportation have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this  
27th day of July, 2004.

A handwritten signature in black ink, reading "Sandra Story Burgess", is written over a horizontal line.

PROJECT COOPERATION AGREEMENT  
BETWEEN  
THE DEPARTMENT OF THE ARMY  
AND  
THE GEORGIA DEPARTMENT OF TRANSPORTATION  
FOR CONSTRUCTION OF THE  
BRUNSWICK HARBOR DEEPENING PROJECT

THIS AGREEMENT is entered into this 5<sup>th</sup> day of April, 2002, by and between the Department of the Army (hereinafter the "Government"), represented by the District Engineer, Savannah District, and the Georgia Department of Transportation (hereinafter the "Non-Federal Sponsor"), represented by the Commissioner of the Non-Federal Sponsor.

WITNESSETH, THAT:

WHEREAS, construction of the Brunswick Harbor Deepening Project (hereinafter the "Project", as defined in Article I.A. of this Agreement) at Brunswick, Georgia was authorized by Section 101(a)(19) of the Water Resources Development Act of 1999, Public Law 106-53;

WHEREAS, the Government and the Non-Federal Sponsor desire to enter into a Project Cooperation Agreement (hereinafter the "Agreement") for construction of the Project;

WHEREAS, Section 101 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, specifies the cost-sharing requirements applicable to the Project;

WHEREAS, Section 221 of the Flood Control Act of 1970, Public Law 91-611, as amended, (codified as amended at 42 U.S.C. § 1962d-5b) and Section 101 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (codified as amended at 33 U.S.C. § 2211), provide, *inter alia*, that the Secretary of the Army shall not commence construction of any water resources project, or separable element thereof, until each non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

WHEREAS, Section 902 of the Water Resources Development Act, Public Law 99-662, as amended, establishes the maximum amount of costs for the Project and sets forth procedures for adjusting such maximum amount;

WHEREAS, the Government and a non-Federal interest entered into an agreement for preconstruction engineering and design of the Project (hereinafter the "Design Agreement"), dated September 30, 1998, under the terms of which the non-Federal interest contributed a percentage of the costs for preconstruction engineering and design.

WHEREAS, the Government and the Non-Federal Sponsor have the full authority and capability to perform as hereinafter set forth and intend to cooperate in cost-sharing and financing of the Project in accordance with the terms of this Agreement; and

WHEREAS, the Government and the Non-Federal Sponsor, in connection with this Agreement, desire to foster a "partnering" strategy and a working relationship between the Government and the Non-Federal Sponsor through a mutually developed formal strategy of commitment and communication embodied herein, which creates an environment where trust and team work prevent disputes, foster a cooperative bond between the Government and the Non-Federal Sponsor, and facilitate the completion of a successful project.

NOW, THEREFORE, the Government and the Non-Federal Sponsor agree as follows:

## ARTICLE I - DEFINITIONS AND GENERAL PROVISIONS

For purposes of this Agreement:

- A. The term "Project" shall mean the general navigation features and all lands, easements, rights-of-way, relocations, or removals that the Government, in accordance with Article III of this Agreement, determines to be necessary for the construction, operation, and maintenance of the general navigation features, but shall not include aids to navigation or the local service facilities.
- B. The term "general navigation features" shall mean:
- Increasing the authorized channel depth in the East River from Station 0+000 to 12+000 from -30' mean low water (mlw) to -36' mlw.
  - Increasing the authorized channel depth in the Turtle River from Station 6+500 to Station 45+000 from -30' mlw to -36' mlw.
  - Increasing the authorized depth in the South Brunswick River from Station 0+000 to 7+000 from -30' mlw to -36' mlw.
  - Increasing the authorized channel depth in the Bar Channel from station -6+500 to station -56+500 from -32' mlw to -38' mlw.
  - Widening the channel at the Sidney Lanier Bridge from 200 to 400 feet from Station 33+000 to Station 34+000.
  - Widening approximately 10,000 feet of the Turtle River Lower Range from 300 to 400 feet, from station 36+000 to Station 43+250.
  - Constructing a new turning basin in the Upper East River Channel at from Station 7+250 to Station 9+875 at the new authorized depth of -36' mlw to approximately 1,100 feet by 1,100 feet, and de-authorizing the existing East River turning basin.
  - Widening approximately 5,750 feet in the Upper East River Channel from 350 feet to 400 feet from Station 6+250 to Station 12+000.
  - Expanding the Lower Turtle River turning basin between Station 43+250 in the Lower Turtle River to Station 1+000 in the South Brunswick River to approximately 2,500 feet by 1,150 feet.

- Widening approximately 3,000 feet in South Brunswick River from 400 to 500 feet from Station 2+750 to Station 6+250 as the South Brunswick Bend Widener.
- The construction of a bird island in Brunswick Harbor as a beneficial use of dredged material.
- Mitigating for impacts to approximately 18 acres of saltwater marsh wetlands by the restoration of approximately 59 acres of saltwater marsh wetlands on Jekyll Island.
- Raising the dikes at Andrews Island disposal site to accommodate for lost capacity due to the deepening project.

All as generally described in the Brunswick Harbor Deepening Feasibility Study, dated May 1998 and approved by the Chief of Engineers on 7 October 1998, as amended by the "Brunswick Harbor Deepening Project Modifications during PED" Limited Reevaluation Report, approved by the South Atlantic Division on 15 March 2002. The term does not include any lands, easements, rights-of-way or relocations; removals; betterments; aids to navigation; or local service facilities.

C. The term "total cost of construction of the general navigation features" shall mean all costs incurred by the Non-Federal Sponsor or the Government in accordance with the terms of this Agreement directly related to construction of the general navigation features. Subject to the provisions of this Agreement, the term shall include, but is not necessarily limited to: the Government's preconstruction engineering and design costs; the value of the non-Federal interest's contributions under the terms of the Design Agreement; the Government's engineering and design costs during construction; the costs of investigations to identify the existence and extent of hazardous substances in accordance with Article XV.A.1. of this Agreement; the costs of historic preservation activities in accordance with Articles XVIII.A. and XVIII.D.1. of this Agreement; the Government's actual construction costs (including any costs of construction of dredged or excavated material disposal facilities incurred prior to the end of the period of construction or during any subsequent period of construction and the costs of alteration, lowering, raising, or replacement and attendant demolition of existing bridges over navigable waters of the United States); the Government's supervision and administration costs; costs of participation in the Project Coordination Team in accordance with Article V of this Agreement; the Government's costs of contract dispute settlements or awards; incidental costs of removals accomplished by the Non-Federal Sponsor before the end of the period of construction or during any subsequent period of construction in accordance with Article II.M. of this Agreement; direct and incidental costs of removals accomplished by the Government before the end of the period of construction or during any subsequent period of construction in accordance with Article II.L. of this Agreement; and costs of audit in accordance with Articles X.B. and X.C. of this Agreement. The term does not include the value of any lands, easements, rights-of-way, or relocations; any costs of removals accomplished by the Non-Federal Sponsor other than incidental costs; any financial obligations for operation and maintenance of the general navigation features; any costs assigned to an existing Federal or non-Federal navigation project in accordance with Article II.E. of this Agreement; any costs assigned by the Government to additional capacity in accordance with Article II.O. of this Agreement; any costs due to betterments; any costs of dispute resolution under Article VII of this Agreement; any costs of

aids to navigation; or any costs of construction, operation and maintenance of the local service facilities.

D. The term "financial obligation for construction" shall mean a financial obligation of the Government that results or would result in a cost that is or would be included in the total cost of construction of the general navigation features.

E. The term "non-Federal proportionate share" shall mean the ratio of the Non-Federal Sponsor's total cash contribution required in accordance with Article II.G. of this Agreement to total financial obligations for construction, as projected by the Government.

F. The term "period of construction" shall mean the time from the date the Government first notifies the Non-Federal Sponsor in writing, in accordance with Article VI.B. of this Agreement, of the scheduled date for either issuance of the solicitation for the first contract for construction of the general navigation features, as defined in Article I.B. of this Agreement, or commencement, using the Government's own forces, of construction of the general navigation features to the date that the U.S. Army Engineer for the Savannah District (hereinafter the "District Engineer") notifies the Non-Federal Sponsor in writing of the Government's determination that construction of the general navigation features is complete, except for any construction of a dredged or excavated material disposal facility, or any expansion (including raising of dikes) of such a facility, that will contain material from maintenance, but not the construction, of the other general navigation features.

G. The term "subsequent period of construction" shall mean a period beginning with the date that the Government first notifies the Non-Federal Sponsor in writing of the scheduled date for either issuance of the solicitation for the contract or commencement, using the Government's own forces, of construction of a dredged or excavated material disposal facility, or any expansion (including raising of dikes) of such a facility, that will contain material from maintenance, but not the construction, of the other general navigation features and ending with the date that the District Engineer notifies the Non-Federal Sponsor in writing of the Government's determination that such construction or expansion is complete. There may be more than one subsequent period of construction and a subsequent period of construction may be concurrent with the period of construction.

H. The term "highway" shall mean any public highway, roadway, street, or way, including any bridge thereof.

I. The term "bridge over navigable waters of the United States" shall mean a lawful bridge over the navigable waters of the United States, including approaches, fenders, and appurtenances thereto, which is used and operated for the purpose of carrying railroad traffic, or both railroad and highway traffic, or if a State, county, municipality, or other political subdivision is the owner or joint owner thereof, which is used and operated for the purpose of carrying highway traffic.

J. The term "relocation" shall mean providing a functionally equivalent facility to the owner of an existing utility, cemetery, highway, railroad (including any bridge thereof), or public



facility, excluding existing bridges over navigable waters of the United States, when such action is authorized in accordance with applicable legal principles of just compensation or providing a functionally equivalent facility when such action is specifically provided for, and is identified as a relocation, in the authorizing legislation for the Project or any report referenced therein. Providing a functionally equivalent facility may take the form of alteration, lowering, raising, or replacement and attendant demolition of the affected facility or part thereof.

K. The term "removal" shall mean eliminating an obstruction (other than a bridge over the navigable waters of the United States) where the Government determines, after consultation with the Non-Federal Sponsor, that: 1) elimination is necessary for the construction, operation, and maintenance of the general navigation features, including the borrowing of material or the disposal of dredged or excavated material associated therewith; 2) elimination must be accomplished before the end of the period of construction or during a subsequent period of construction; and 3) the Non-Federal Sponsor, the State of Georgia, or the Government has the legal capability to accomplish elimination of the obstruction at the expense of the owner or operator thereof. The term also shall mean the elimination of an obstruction to the construction, operation, and maintenance of the general navigation features when such elimination is specifically provided for, and is identified as a removal, in the authorizing legislation for the Project or any report referenced therein.

L. The term "fiscal year" shall mean one fiscal year of the Government. The Government fiscal year begins on October 1 and ends on September 30.

M. The term "betterment" shall mean a change in the design and construction of an element of the general navigation features accomplished at the request of the Non-Federal Sponsor resulting from the application of standards that the Government determines exceed those that the Government would otherwise apply for accomplishing the design and construction of that element. The term does not include any enlargement of the capacity of any dredged or excavated material disposal facility to enable disposal of dredged or excavated material from outside the other general navigation features.

N. The term "dredged or excavated material disposal facility" shall mean the improvements necessary on lands, easements, or rights-of-way to enable the disposal of dredged or excavated material associated with the construction, operation, and maintenance of the other general navigation features. Such improvements may include, but not necessarily be limited to, retaining dikes, wasteweirs, bulkheads, embankments, monitoring features, stilling basins, or de-watering pumps or pipes.

O. The term "depth", when used to determine the cost sharing required under this Agreement, shall mean dredged or excavated depth net of associated entrance channel wave allowances and over-depth.

P. The term "over-depth" shall mean additional dimensions associated with a given depth that are required to accomplish advanced maintenance, if any, and to compensate for dredging inaccuracies at that depth.

Q. The term "utility" shall mean that which the State of Georgia, pursuant to generally applicable state law, defines as a public utility.

R. The term "Federal program funds" shall mean funds or grants provided by a Federal agency, other than the Department of the Army, and any non-Federal matching share required therefor.

S. The term "local service facilities" shall mean the facilities that are necessary to realize the benefits of the general navigation features, as generally described in, and required of the Non-Federal Sponsor by the Brunswick Harbor Deepening Feasibility Report, dated May 1998. The local service facilities are the berthing areas for Mayor's Point Terminal located in East River, Marine Point Terminals Incorporated located in East River, and Colonel's Island Terminal located in South Brunswick River.

## ARTICLE II - OBLIGATIONS OF THE GOVERNMENT AND THE NON-FEDERAL SPONSOR

A. The Government, subject to receiving funds appropriated by the Congress of the United States (hereinafter the "Congress") and using those funds and funds provided by the Non-Federal Sponsor, shall expeditiously construct the general navigation features (including alteration, lowering, raising, or replacement and attendant removal of existing bridges over navigable waters of the United States), applying those procedures usually applied to Federal projects, pursuant to Federal laws, regulations, and policies.

1. The Government shall afford the Non-Federal Sponsor the opportunity to review and comment on the solicitations for all contracts, including relevant plans and specifications, prior to the Government's issuance of such solicitations. The Government shall not issue the solicitation for the first construction contract or commencement of construction using its own forces until the Non-Federal Sponsor has confirmed in writing its willingness to proceed with the Project and the local service facilities. To the extent possible, the Government shall afford the Non-Federal Sponsor the opportunity to review and comment on all proposed contract modifications, including change orders. In any instance where providing the Non-Federal Sponsor with notification of a contract modification is not possible prior to execution of the contract modification, the Government shall provide such notification in writing at the earliest date possible. To the extent possible, the Government also shall afford the Non-Federal Sponsor the opportunity to review and comment on all contract claims prior to resolution thereof. The Government shall consider in good faith the comments of the Non-Federal Sponsor, but the contents of solicitations, award of contracts or commencement of construction using its own forces, execution of contract modifications, resolution of contract claims, and performance of all work on the general navigation features (whether the work is performed under contract or by Government personnel), shall be exclusively within the control of the Government.

2. Throughout the period of construction and during any subsequent period of construction, the District Engineer shall furnish the Non-Federal Sponsor with a copy of the

Government's Written Notice of Acceptance of Completed Work for each contract for the general navigation features.

3. Notwithstanding paragraph A.1. of this Article, if the award of any contract for construction of the general navigation features would result in total cost of construction of the general navigation features exceeding \$54,774,000, the Government and the Non-Federal Sponsor agree to defer award of that contract and all subsequent contracts for construction of the general navigation features until such time as the Government and the Non-Federal Sponsor agree to proceed with further contract awards for the general navigation features, but in no event shall the award of contracts be deferred for more than three years. Notwithstanding this general provision for deferral of contract awards, the Government, after consultation with the Non-Federal Sponsor, may award a contract or contracts after the Assistant Secretary of the Army (Civil Works) makes a written determination that the award of such contract or contracts must proceed in order to comply with law or to protect human life or property from imminent and substantial harm.

B. The Non-Federal Sponsor may request the Government to design or construct betterments. Such requests shall be in writing and shall describe the betterments requested to be performed. If the Government in its sole discretion elects to perform the requested betterments or any portion thereof, it shall so notify the Non-Federal Sponsor in a writing that sets forth any applicable terms and conditions, which must be consistent with this Agreement. In the event of conflict between such a writing and this Agreement, this Agreement shall control. The Non-Federal Sponsor shall be solely responsible for all costs due to the requested betterments and shall pay all such costs in accordance with Article VI.C. of this Agreement.

C. In accordance with Article III of this Agreement, the Non-Federal Sponsor shall provide all lands, easements, or rights-of-way that the Government determines the Non-Federal Sponsor must provide for the construction, operation, and maintenance of the general navigation features, including the borrowing of material or the disposal of dredged or excavated material associated therewith, and shall perform or ensure performance of all relocations that the Government determines to be necessary for the construction, operation, and maintenance of the general navigation features.

D. The Non-Federal Sponsor may request the Government to provide lands, easements, or rights-of-way or to perform relocations for the general navigation features on behalf of the Non-Federal Sponsor. Such requests shall be in writing and shall describe the services requested to be performed. If in its sole discretion the Government elects to perform the requested services or any portion thereof, it shall so notify the Non-Federal Sponsor in a writing that sets forth any applicable terms and conditions, which must be consistent with this Agreement. In the event of conflict between such a writing and this Agreement, this Agreement shall control. The Non-Federal Sponsor shall be solely responsible for all costs of the requested services and shall pay all such costs in accordance with Article VI.C. of this Agreement. Notwithstanding the provision of lands, easements, or rights-of-way, or performance of relocations by the Government, the Non-Federal Sponsor shall be responsible, as between the Government and the Non-Federal Sponsor, for the costs of cleanup and response in accordance with Article XV.D. of this Agreement.

E. The Government shall assign all costs associated with the dredging or excavation of material from the dimensions, including over-depth and entrance channel wave allowances, of any existing Federal or non-Federal navigation project to the costs of operation and maintenance of the existing Federal or non-Federal navigation project. The Government, in accordance with Federal laws, regulations, and policies, shall assign all costs included or to be included in the total cost of construction of the general navigation features during the period of construction to one or more of the following depth increments: dredging to a depth not in excess of 20 feet plus associated over-depth and entrance channel wave allowances; dredging to a depth in excess of 20 feet but not in excess of 45 feet plus associated over-depth and entrance channel wave allowances. Any costs of construction of the general navigation features incurred during a subsequent period of construction shall be assigned to the Project dredged depth.

F. The Non-Federal Sponsor shall contribute 25 percent of the total cost of construction of the general navigation features (including any costs of dredged or excavated material disposal facilities during any subsequent period of construction).

G. If the Government projects that the Non-Federal Sponsor's contributions under paragraph M.3. of this Article, and the Non-Federal Sponsor's contributions under Articles V, X.B., X.C., XV.A.1., and XVIII of this Agreement will be less than its share required by paragraph F. of this Article, the Non-Federal Sponsor shall provide a contribution of funds, in accordance with Article VI.B. of this Agreement, in the amount necessary to meet its share required by paragraph F. of this Article.

H. The Government shall perform a final accounting in accordance with Article VI.D. of this Agreement to determine the Non-Federal Sponsor's contributions provided in accordance with paragraphs B., D., G., M.3., N. and O. of this Article before the end of the period of construction, and the Non-Federal Sponsor's contributions provided in accordance with Articles V, X.B., X.C., XV.A.1., and XVIII of this Agreement before the end of the period of construction and to determine whether the Non-Federal Sponsor has met its obligations under paragraphs B., D., F., N., and O. of this Article for the period of construction. The final accounting also shall determine an amount equal to 10 percent of the total cost of construction of the general navigation features (hereinafter the "10 percent amount") before the end of the period of construction. In the event there is a subsequent period of construction, the Government shall amend the final accounting in accordance with Article VI.E.5. of this Agreement.

I. Before furnishing the Non-Federal Sponsor with the results of the final accounting, the Government shall afford credit against the 10 percent amount for the value, as determined in accordance with Article IV of this Agreement, of lands, easements, rights-of-way, or relocations provided before the end of the period of construction; provided, however, that such credit shall not exceed the 10 percent amount. In accordance with Article VI.E. of this Agreement, the Non-Federal Sponsor shall, over a period not to exceed 30 years, pay an amount equal to the 10 percent amount reduced by such credit (hereinafter the "principal amount"), with interest. In accordance with Article VI.E.4. of this Agreement, the Government also shall afford credit against the principal amount for the value, as determined in accordance with Article IV of this Agreement, of the lands, easements, rights-of-way, or relocations provided after the period of

construction. In the event there is a subsequent period of construction and the Government amends the final accounting in accordance with Article VI.E.5. of this Agreement, the Non-Federal Sponsor, in accordance with Article VI.E.5. of this Agreement, shall pay any additional portion of the principal amount that is outstanding as a consequence of the amended final accounting.

J. The Government shall operate and maintain the general navigation features and the Non-Federal Sponsor shall provide authorization for entry in accordance with Article VIII.A.1. of this Agreement.

K. The Non-Federal Sponsor shall not use Federal program funds to meet its obligations for the Project under this Agreement unless the Federal agency providing the Federal program funds verifies in writing that such expenditure of funds is expressly authorized by statute.

L. The Government shall accomplish all removals that neither the Non-Federal Sponsor nor the State of Georgia has the legal capability to accomplish where both the Non-Federal Sponsor and the State of Georgia make a written request for the Government to accomplish such removals, and shall accomplish all removals that the Government is expressly required to accomplish in the authorizing legislation for the Project or any report referenced therein.

1. In the event a court determines that the owner of an obstruction is entitled to payment of just compensation as the result of elimination of the obstruction, such removal shall be reclassified as part of the Non-Federal Sponsor's responsibility to provide lands, easements, and rights-of-way, or to perform relocations, as appropriate, pursuant to Article II.C. of this Agreement.

2. All costs incurred by the Government in accomplishing removals shall be included in the total cost of construction of the general navigation features and shared in accordance with the provisions of this Agreement.

M. The Non-Federal Sponsor shall accomplish all removals, other than those removals specifically assigned to the Government by paragraph L. of this Article, in accordance with the provisions of this paragraph.

1. The Government in a timely manner shall provide the Non-Federal Sponsor with general written descriptions, including maps as appropriate, of such removals, in detail sufficient to enable the Non-Federal Sponsor to fulfill its obligations under this paragraph, and shall provide the Non-Federal Sponsor with a written notice to proceed with accomplishing such removals. Unless the Government agrees to a later date in writing, prior to the issuance of the solicitation for each Government contract for construction, operation, and maintenance of the general navigation features, or prior to the Government incurring any financial obligation for construction, operation, and maintenance of the general navigation features that it elects to perform with its own forces, the Non-Federal Sponsor shall accomplish all removals set forth in such descriptions that the Government determines to be necessary for that work.

2. In the event a court determines that the owner of an obstruction is entitled to payment of just compensation as the result of elimination of the obstruction, such removal shall be reclassified as part of the Non-Federal Sponsor's responsibility to provide lands, easements, and rights-of-way, or to perform relocations, as appropriate, pursuant to Article II.C. of this Agreement.

3. The documented incidental costs incurred by the Non-Federal Sponsor in accomplishing removals shall be included in the total cost of construction of the general navigation features, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs, and shared in accordance with the provisions of this Agreement. Incidental costs may include legal and administrative costs (such as owner or operator notification costs, public notice or hearing costs, attorney's fees, and litigation costs) incurred by the Non-Federal Sponsor in accomplishing removals, but shall not include any costs that the Non-Federal Sponsor or the State of Georgia has the legal capability to require of, assign to, or recover from the owner or operator of the obstruction.

N. The Non-Federal Sponsor may request the Government to design, construct, or operate and maintain the local service facilities. Such requests shall be in writing and shall describe the local service facilities requested to be performed. If the Government in its sole discretion elects to perform the requested services or any portion thereof, it shall so notify the Non-Federal Sponsor in a writing that sets forth any applicable terms and conditions, which must be consistent with this Agreement. In the event of conflict between such a writing and this Agreement, this Agreement shall control. The Non-Federal Sponsor shall be solely responsible for all costs due to the requested services and shall pay all such costs in accordance with Article VI.C. of this Agreement.

O. The Non-Federal Sponsor may request the Government to provide additional capacity, over and above the capacity needed solely for dredged or excavated material from the other general navigation features, at a dredged or excavated material disposal facility for dredged or excavated material from outside the general navigation features. Such requests shall be in writing and shall describe the additional capacity requested to be provided. If the Government in its sole discretion elects to provide the requested additional capacity or any portion thereof, it shall so notify the Non-Federal Sponsor in a writing that sets forth any applicable terms and conditions, which must be consistent with this Agreement. In the event of conflict between such a writing and this Agreement, this Agreement shall control. In the event the Government elects to provide the additional capacity, the Government shall allocate capacity costs between the total cost of construction of the general navigation features and the costs of the additional capacity. The Non-Federal Sponsor shall be solely responsible for all costs allocated by the Government to the additional capacity and shall pay all such costs in accordance with Article VI.C. of this Agreement.

P. Subject to applicable Federal laws and regulations, the Non-Federal Sponsor, at no cost to the Government and in a timely manner, shall construct or cause to be constructed the local service facilities, including dredging or excavation and disposal of material therefrom, and shall be responsible for taking all actions to enable such construction. The Government shall

have no responsibility under this Agreement for the construction of the local service facilities or the construction of any other facilities provided by the Non-Federal Sponsor or a third party.

Q. In accordance with Article VIII. of this Agreement, the Non-Federal Sponsor, at no cost to the Government, shall operate and maintain or cause to be operated and maintained the local service facilities, including dredging or excavation and disposal of material therefrom. The Government shall have no responsibility under this Agreement for the operation and maintenance of the local service facilities or the operation and maintenance of any other facilities provided by the Non-Federal Sponsor or a third party.

### ARTICLE III - LANDS, RELOCATIONS, AND PUBLIC LAW 91-646 COMPLIANCE

A. The Government, after consultation with the Non-Federal Sponsor, shall determine the lands, easements, or rights-of-way necessary for the construction, operation, and maintenance of the general navigation features, including those lands, easements, or rights-of-way necessary for the borrowing of material, the disposal of dredged or excavated material, or relocations, and including those lands, easements, or rights-of-way that the Government determines to be subject to the navigation servitude. The Government in a timely manner shall provide the Non-Federal Sponsor with general written descriptions, including maps as appropriate, of the lands, easements, or rights-of-way that the Government determines the Non-Federal Sponsor must provide, in detail sufficient to enable the Non-Federal Sponsor to fulfill its obligations under this paragraph, and shall provide the Non-Federal Sponsor with a written notice to proceed with acquisition of such lands, easements, or rights-of-way. Prior to the end of the period of construction, or the subsequent period of construction, as applicable, the Non-Federal Sponsor shall acquire all lands, easements, or rights-of-way necessary for the construction of the general navigation features, as set forth in such descriptions. Furthermore, prior to issuance of the solicitation for each Government contract for construction, operation, and maintenance of the general navigation features or prior to the Government incurring any financial obligation for construction, operation, and maintenance it elects to perform with its own forces, the Non-Federal Sponsor shall acquire all lands, easements, or rights-of-way the Government determines the Non-Federal Sponsor must provide for that work and shall provide the Government with authorization for entry thereto.

B. The Government, after consultation with the Non-Federal Sponsor, shall determine the relocations necessary for the construction, operation, and maintenance of the general navigation features, including those necessary to enable the borrowing of material or the disposal of dredged or excavated material. The Government in a timely manner shall provide the Non-Federal Sponsor with general written descriptions, including maps as appropriate, of such relocations in detail sufficient to enable the Non-Federal Sponsor to fulfill its obligations under this paragraph, and shall provide the Non-Federal Sponsor with a written notice to proceed with such relocations. Unless the Government agrees to a later date in writing, prior to issuance of the solicitation for each Government contract for construction, operation, and maintenance of the general navigation features or prior to the Government incurring any financial obligation for construction, operation, and maintenance it elects to perform by its own forces, the Non-Federal Sponsor shall prepare or ensure the preparation of plans and specifications for, and perform or



ensure the performance of, all relocations the Government determines to be necessary for that work.

C. Until the Government furnishes the Non-Federal Sponsor with the results of the final accounting pursuant to Article VI.D. of this Agreement, or the credit afforded pursuant to Article II.I. of this Agreement equals the 10 percent amount, whichever occurs later, the Non-Federal Sponsor in a timely manner shall provide the Government with such documents as are sufficient to enable the Government to determine the value of any contribution provided pursuant to paragraph A. or B. of this Article. Upon receipt of such documents the Government in a timely manner shall afford credit for the value of such contribution in accordance with Article II.I. of this Agreement.

D. The Non-Federal Sponsor shall comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 C.F.R. Part 24, in acquiring lands, easements, or rights-of-way necessary for the construction, operation, and maintenance of the general navigation features, including those necessary for relocations, the borrowing of material, or the disposal of dredged or excavated material, and shall inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

#### ARTICLE IV - CREDIT FOR VALUE OF LANDS AND RELOCATIONS

A. The Non-Federal Sponsor shall receive credit in accordance with Article II.I. of this Agreement for the value of the lands, easements, or rights-of-way that the Non-Federal Sponsor must provide pursuant to Article III of this Agreement, and for the value of the relocations that the Non-Federal Sponsor must perform or for which it must ensure performance pursuant to Article III of this Agreement. However, the Non-Federal Sponsor shall not receive credit for the value of any lands, easements, rights-of-way, or relocations that have been provided previously as an item of cooperation for another Federal project. The Non-Federal Sponsor also shall not receive credit for the value of lands, easements, rights-of-way, or relocations to the extent that such items are provided or performed using Federal program funds unless the Federal agency providing the Federal program funds verifies in writing that such credit is expressly authorized by statute.

B. For the sole purpose of affording credit in accordance with this Agreement, the value of lands, easements, and rights-of-way, including those necessary for the borrowing of material, the disposal of dredged or excavated material, or relocations other than those the Government acquires on behalf of the Non-Federal Sponsor pursuant to Article II.D. of this Agreement, shall be the fair market value of the real property interests, plus certain incidental costs of acquiring those interests, as determined in accordance with the provisions of this paragraph.

1. Date of Valuation. The fair market value of lands, easements, or rights-of-way owned by the Non-Federal Sponsor on the effective date of this Agreement shall be the fair market value of such real property interests as of the date the Non-Federal Sponsor provides the



Government with authorization for entry thereto. The fair market value of lands, easements, or rights-of-way acquired by the Non-Federal Sponsor after the effective date of this Agreement shall be the fair market value of such real property interests at the time the interests are acquired.

2. General Valuation Procedure. Except as provided in paragraph B.3. or B.4. of this Article, the fair market value of lands, easements, or rights-of-way shall be determined in accordance with paragraph B.2.a. of this Article, unless thereafter a different amount is determined to represent fair market value in accordance with paragraph B.2.b. of this Article.

a. The Non-Federal Sponsor shall obtain, for that real property interest, an appraisal that is prepared by a qualified appraiser who is acceptable to the Non-Federal Sponsor and the Government. The Non-Federal Sponsor shall provide the Government with the appraisal no later than 6 months after the Non-Federal Sponsor provides the Government with an authorization for entry for such real property interest, or, in the event an authorization for entry is not required, no later than the end of the period of construction or the end of the subsequent period of construction, as applicable. The appraisal must be prepared in accordance with the applicable rules of just compensation, as specified by the Government. The fair market value shall be the amount set forth in the Non-Federal Sponsor's appraisal, if such appraisal is approved by the Government. In the event the Government does not approve the Non-Federal Sponsor's appraisal, the Non-Federal Sponsor may obtain a second appraisal, and the fair market value shall be the amount set forth in the Non-Federal Sponsor's second appraisal, if such appraisal is approved by the Government. In the event the Government does not approve the Non-Federal Sponsor's second appraisal, the Non-Federal Sponsor chooses not to obtain a second appraisal, or the Non-Federal Sponsor does not provide the first appraisal as required in this paragraph, the Government shall obtain an appraisal, and the fair market value shall be the amount set forth in the Government's appraisal, if such appraisal is approved by the Non-Federal Sponsor. In the event the Non-Federal Sponsor does not approve the Government's appraisal, the Government, after consultation with the Non-Federal Sponsor, shall consider the Government's and the Non-Federal Sponsor's appraisals and determine an amount based thereon, which shall be deemed to be the fair market value.

b. Where the amount paid or proposed to be paid by the Non-Federal Sponsor for the real property interest exceeds the amount determined pursuant to paragraph B.2.a. of this Article, the Government, at the request of the Non-Federal Sponsor, shall consider all factors relevant to determining fair market value and, in its sole discretion, after consultation with the Non-Federal Sponsor, may approve in writing an amount greater than the amount determined pursuant to paragraph B.2.a. of this Article, but not to exceed the amount actually paid or proposed to be paid. If the Government approves such an amount, the fair market value shall be the lesser of the approved amount or the amount paid by the Non-Federal Sponsor, but no less than the amount determined pursuant to paragraph B.2.a. of this Article.

3. Eminent Domain Valuation Procedure. For lands, easements, or rights-of-way acquired by eminent domain proceedings instituted after the effective date of this Agreement, the Non-Federal Sponsor shall, prior to instituting such proceedings, submit to the Government notification in writing of its intent to institute such proceedings and an appraisal of the specific real property interests to be acquired in such proceedings. The Government shall have 60 days

after receipt of such a notice and appraisal within which to review the appraisal, if not previously approved by the Government in writing.

a. If the Government previously has approved the appraisal in writing, or if the Government provides written approval of, or takes no action on, the appraisal within such 60-day period, the Non-Federal Sponsor shall use the amount set forth in such appraisal as the estimate of just compensation for the purpose of instituting the eminent domain proceeding.

b. If the Government provides written disapproval of the appraisal, including the reasons for disapproval, within such 60-day period, the Government and the Non-Federal Sponsor shall consult in good faith to promptly resolve the issues or areas of disagreement that are identified in the Government's written disapproval. If, after such good faith consultation, the Government and the Non-Federal Sponsor agree as to an appropriate amount, then the Non-Federal Sponsor shall use that amount as the estimate of just compensation for the purpose of instituting the eminent domain proceeding. If, after such good faith consultation, the Government and the Non-Federal Sponsor cannot agree as to an appropriate amount, then the Non-Federal Sponsor may use the amount set forth in its appraisal as the estimate of just compensation for the purpose of instituting the eminent domain proceeding.

c. For lands, easements, or rights-of-way acquired by eminent domain proceedings instituted in accordance with paragraph B.3. of this Article, fair market value shall be either the amount of the court award for the real property interests taken, to the extent the Government determined such interests are necessary for the construction, operation, and maintenance of the general navigation features, or the amount of any stipulated settlement or portion thereof that the Government approves in writing.

4. Incidental Costs. For lands, easements, or rights-of-way acquired by the Non-Federal Sponsor within a five-year period preceding the effective date of this Agreement, or at any time after the effective date of this Agreement, the value of the interest shall include the documented incidental costs of acquiring the interest, as determined by the Government, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs. In the event the Government modifies its determination made pursuant to Article III.A. of this Agreement, the Non-Federal Sponsor shall receive credit for the documented incidental costs associated with preparing to acquire lands, easements, or rights-of-way identified in the original determination, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs. Such incidental costs shall include, but not necessarily be limited to, closing and title costs, appraisal costs, survey costs, attorney's fees, plat maps, and mapping costs, as well as the actual amounts expended for payment of any Public Law 91-646 relocation assistance benefits provided in accordance with Article III.D. of this Agreement.

C. For the sole purpose of affording credit in accordance with this Agreement, the value of lands, easements, and rights-of-way, including those necessary for the borrowing of material, the disposal of dredged or excavated material, or relocations, that the Government acquires on behalf of the Non-Federal Sponsor pursuant to Article II.D. of this Agreement shall be the fair

market value of the real property interests, plus certain incidental costs of acquiring those interests, as determined in accordance with the provisions of this paragraph.

1. The fair market value of such real property interests shall be the amount paid by the Government.

2. The value of the interest shall include the documented incidental costs of acquiring the interest. Such incidental costs shall include, but not necessarily be limited to, closing and title costs, appraisal costs, survey costs, attorney's fees, plat maps, and mapping costs, as well as the actual amounts expended for payment of any Public Law 91-646 relocation assistance benefits.

D. After consultation with the Non-Federal Sponsor, the Government shall determine the value of relocations in accordance with the provisions of this paragraph.

1. For a relocation other than a highway or a utility, the value shall be only that portion of relocation costs that the Government determines is necessary to provide a functionally equivalent facility, reduced by depreciation, as applicable, and by the salvage value of any removed items.

2. For a relocation of a highway, the value shall be only that portion of relocation costs that would be necessary to accomplish the relocation in accordance with the design standard that the State of Georgia would apply under similar conditions of geography and traffic load, reduced by the salvage value of any removed items.

3. For a relocation of a utility, the value shall be only that portion of relocation costs borne by the Non-Federal Sponsor that the Government determines is necessary to provide a functionally equivalent facility, reduced by depreciation, as applicable, and by the salvage value of any removed items.

4. Relocation costs shall include, but not necessarily be limited to, actual costs of performing the relocation; planning, engineering and design costs; supervision and administration costs; and documented incidental costs associated with performance of the relocation, but shall not include any costs due to betterments, as determined by the Government, nor any additional cost of using new material when suitable used material is available. Relocation costs shall be subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs.

5. Crediting for relocations performed within the Project boundaries is subject to satisfactory compliance with applicable federal labor laws covering non-Federal construction, including, but not limited to the Davis-Bacon Act (40 U.S.C. 276a, et. seq.), the Contract Work Hours and Safety Standards Act (40 U.S.C. 327, et. seq.) and the Copeland Anti-Kickback Act (40 U.S.C. 276c). Crediting may be withheld, in whole or in part, as a result of the Non-Federal Sponsor's failure to comply with its obligations under these laws.

## ARTICLE V - PROJECT COORDINATION TEAM

A. To provide for consistent and effective communication, the Non-Federal Sponsor and the Government, not later than 30 days after the effective date of this Agreement, shall appoint named senior representatives to a Project Coordination Team. Thereafter, the Project Coordination Team shall meet regularly until the end of the period of construction and during each subsequent period of construction. The Government's Project Manager and a counterpart named by the Non-Federal Sponsor shall co-chair the Project Coordination Team.

B. The Government's Project Manager and the Non-Federal Sponsor's counterpart shall keep the Project Coordination Team informed of the progress of construction and of significant pending issues and actions, and shall seek the views of the Project Coordination Team on matters that the Project Coordination Team generally oversees.

C. Until the end of the period of construction and during each subsequent period of construction, the Project Coordination Team shall generally oversee the Project, including but not necessarily limited to matters related to design; plans and specifications; scheduling; real property, relocation, and removal requirements; real property acquisition; contract awards or modifications; contract costs; the application of and compliance with the Davis-Bacon Act, Contract Work hours and Safety Standards Act and the Copeland Anti-Kickback Act for relocations; the Government's cost projections; final inspection of the entire Project or functional portions of the Project; preparation of the management plan for proposed dredged or excavated material disposal; anticipated requirements for operation and maintenance of the general navigation features; and other Project-related matters. The Project Coordination Team also shall generally oversee the coordination of schedules for the Project and the local service facilities. Oversight of the Project shall be consistent with a project management plan developed by the Government after consultation with the Non-Federal Sponsor.

D. The Project Coordination Team may make recommendations that it deems warranted to the District Engineer on Project-related matters that the Project Coordination Team generally oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider the recommendations of the Project Coordination Team. The Government, having the legal authority and responsibility for construction of the general navigation features, has the discretion to accept or reject, in whole or in part, the Project Coordination Team's recommendations.

E. The costs of participation in the Project Coordination Team shall be included in the total cost of construction of the general navigation features and shared in accordance with the provisions of this Agreement.

## ARTICLE VI - METHOD OF PAYMENT

A. Until the Government furnishes the Non-Federal Sponsor with the results of the final accounting, the Government shall maintain current records of contributions provided by the parties and current projections of the total cost of construction of the general navigation features

and costs due to additional work under Article II.B., II.D., II.N., or II.O. of this Agreement. At least quarterly during the period of construction and during each subsequent period of construction, if applicable, the Government shall provide the Non-Federal Sponsor with a report setting forth all contributions provided to date and the current projections of the total cost of construction of the general navigation features, of total costs due to additional work under Article II.B., II.D., II.N., or II.O. of this Agreement, of the maximum amount determined in accordance with Article XXI of this Agreement, of the Non-Federal Sponsor's total contributions required in accordance with Articles II.B., II.D., II.G., II.N., and II.O. of this Agreement, of the non-Federal proportionate share, of the funds required from the Non-Federal Sponsor for the upcoming fiscal year, of the credit to be afforded pursuant to Article II.I. of this Agreement for the value of lands, easements, rights-of way, or relocations contributed before the end of the period of construction and during any subsequent period of construction, of the 10 percent amount, of the principal amount, and of the installments to be paid in accordance with paragraph E.2. of this Article. Thereafter, until the outstanding portion of the principal amount equals \$0, the Government, at least annually, shall provide the Non-Federal Sponsor with a report setting forth the outstanding portion of the principal amount and the current projection of the remaining installments to be paid in accordance with paragraph E.2. of this Article. On the effective date of this Agreement, the total cost of construction of the general navigation features is projected to be \$54,774,000, and the Non-Federal Sponsor's contribution required under Article II.G. of this Agreement is projected to be \$13,693,500. These amounts are subject to adjustment by the Government, after consultation with the non-Federal Sponsor, and are not to be construed as the total financial responsibilities of the Government and the Non-Federal Sponsor.

B. The Non-Federal Sponsor shall provide the contribution required by Article II.G. of this Agreement in accordance with the provisions of this paragraph.

1. Not less than 30 calendar days prior to the scheduled date for either issuance of the solicitation for the first construction contract or commencement of construction using the Government's own forces, the Government shall notify the Non-Federal Sponsor in writing of such scheduled date and the funds the Government determines to be required from the Non-Federal Sponsor to meet the non-Federal proportionate share of projected financial obligations for construction through the first fiscal year of construction, including the non-Federal proportionate share of financial obligations for construction incurred prior to the commencement of the period of construction. Not later than such scheduled date, the Non-Federal Sponsor shall provide the Government with the full amount of the required funds by delivering a check payable to "FAO, USAED, Savannah District" to the District Engineer, or verifying to the satisfaction of the Government that the Non-Federal Sponsor has deposited the required funds in an escrow or other account acceptable to the Government, with interest accruing to the Non-Federal Sponsor, or presenting the Government with an irrevocable letter of credit acceptable to the Government for the required funds, or providing an Electronic Funds Transfer of the required funds in accordance with procedures established by the Government.

2. For the second and subsequent fiscal years of construction, the Government shall notify the Non-Federal Sponsor in writing, no later than 60 calendar days prior to the beginning of that fiscal year, of the funds the Government determines to be required from the Non-Federal Sponsor to meet the non-Federal proportionate share of projected financial

obligations for construction for that fiscal year (including the construction of or modifications to a dredged or excavated material disposal facility during any subsequent period of construction). No later than 30 calendar days prior to the beginning of the fiscal year, the Non-Federal Sponsor shall make the full amount of the required funds for that fiscal year available to the Government through any of the payment mechanisms specified in paragraph B.1. of this Article.

3. The Government shall draw from the funds provided by the Non-Federal Sponsor such sums as the Government deems necessary to cover: (a) the non-Federal proportionate share of financial obligations for construction incurred prior to the commencement of the period of construction; and (b) the non-Federal proportionate share of financial obligations for construction as they are incurred during the period of construction or during the subsequent period of construction, as applicable.

4. If at any time during the period of construction or any subsequent period of construction the Government determines that additional funds will be needed from the Non-Federal Sponsor to cover the non-Federal proportionate share of projected financial obligations for construction for the current fiscal year, the Government shall notify the Non-Federal Sponsor in writing of the additional funds required and provide an explanation of why additional funds are required, and the Non-Federal Sponsor, no later than 60 calendar days from receipt of such notice, shall make the additional required funds available through any of the payment mechanisms specified in paragraph B.1. of this Article.

C. In advance of the Government incurring any financial obligation associated with additional work under Article II.B., II.D., II.N., or II.O. of this Agreement, the Non-Federal Sponsor shall provide the Government with the full amount of the funds required to pay for such financial obligation through any of the payment mechanisms specified in paragraph B.1. of this Article. The Government shall draw from the funds provided by the Non-Federal Sponsor such sums as the Government deems necessary to cover the Government's financial obligations for such additional work as they are incurred. In the event the Government determines that the Non-Federal Sponsor must provide additional funds to meet such financial obligations, the Government shall notify the Non-Federal Sponsor in writing of the additional funds required and provide an explanation of why additional funds are required. Within 30 calendar days thereafter, the Non-Federal Sponsor shall provide the Government with the full amount of the additional required funds through any of the payment mechanisms specified in paragraph B.1. of this Article.

D. Upon completion of the period of construction or termination of this Agreement before the end of the period of construction, and upon resolution of all relevant proceedings, claims, and appeals, the Government shall conduct a final accounting and furnish the Non-Federal Sponsor with the results of the final accounting. The Government may perform an interim accounting, if requested by the Non-Federal Sponsor.

1. The final accounting shall determine the total cost of construction of the general navigation features before the end of the period of construction, each party's contribution provided thereto, and each party's required share thereof. The final accounting also shall determine total costs due to additional work before the end of the period of construction under



Article II.B., II.D., II.N., or II.O. of this Agreement and the Non-Federal Sponsor's contribution provided before the end of the period of construction in accordance with Article II.B., II.D., II.N., or II.O. of this Agreement.

a. In the event the final accounting shows that the total contribution provided by the Non-Federal Sponsor before the end of the period of construction is less than its required share of the total cost of construction of the general navigation features before the end of the period of construction plus costs due to additional work before the end of the period of construction under Article II.B., II.D., II.N., or II.O. of this Agreement, the Non-Federal Sponsor shall, no later than 90 calendar days after receipt of written notice, make a payment to the Government of whatever sum is required to meet the Non-Federal Sponsor's required share of the total cost of construction of the general navigation features before the end of the period of construction plus costs due to additional work before the end of the period of construction under Article II.B., II.D., II.N., or II.O. of this Agreement by delivering a check payable to "FAO, USAED, Savannah District" to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

b. In the event the final accounting shows that the total contribution provided by the Non-Federal Sponsor before the end of the period of construction exceeds its required share of the total cost of construction of the general navigation features before the end of the period of construction plus costs due to additional work before the end of the period of construction under Article II.B., II.D., II.N., or II.O. of this Agreement, the Government shall, subject to the availability of funds, refund the excess to the Non-Federal Sponsor no later than 90 calendar days after the final accounting is complete. In the event existing funds are not available to refund the excess to the Non-Federal Sponsor, the Government shall seek such appropriations as are necessary to make the refund.

2. The final accounting also shall determine the 10 percent amount and the value, as determined in accordance with Article IV of this Agreement, of lands, easements, rights-of-way, or relocations provided before the end of the period of construction.

E. The Non-Federal Sponsor shall pay the principal amount required by Article II.I. of this Agreement in accordance with the provisions of this paragraph.

1. Before furnishing the Non-Federal Sponsor with the results of the final accounting, the Government shall calculate the principal amount and the annual installments, which installments shall be substantially equal. At the time the Government furnishes the Non-Federal Sponsor with the results of the final accounting, the Government shall notify the Non-Federal Sponsor in writing of the principal amount and the annual installments. The Government shall recalculate the annual installments at five year intervals and shall notify the Non-Federal Sponsor in writing of the recalculated annual installments. In calculating or recalculating the annual installments, the Government shall amortize the principal amount over a period of 30 years (hereinafter the "payment period"), beginning on the date the Government notifies the Non-Federal Sponsor of the principal amount, using an interest rate determined by the Secretary of the Treasury. In the case of the initial calculation, the interest rate shall be determined by the Secretary of the Treasury taking into consideration the average market yields

on outstanding marketable obligations of the United States with remaining periods to maturity comparable to the payment period during the month preceding the fiscal year in which the Government awards the first contract for construction of the general navigation features or commences construction using its own forces, plus a premium of one-eighth of one percentage point for transaction costs. In the case of recalculations, the interest rate shall be determined by the Secretary of the Treasury taking into consideration such average market yields during the month preceding the fiscal year in which the sixth installment is to be paid, and thereafter during the month preceding the fiscal year in which each fifth installment is to be paid, plus a premium of one-eighth of one percentage point for transaction costs.

2. The Non-Federal Sponsor shall pay the installments calculated or recalculated pursuant to paragraph E.1. of this Article each year on the anniversary of the date the Government notifies the Non-Federal Sponsor of the principal amount, over a period not to exceed the payment period, by delivering a check payable to "FAO, USAED, Savannah District" to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

3. Notwithstanding paragraph E.2. of this Article, the Non-Federal Sponsor, in its sole discretion, may prepay the principal amount, in whole or in part, at any time. Notwithstanding paragraph E.1. of this Article, there shall be no charges for interest on any portion of the principal amount prepaid within 90 days after the Government notifies the Non-Federal Sponsor of the principal amount.

4. After the Government furnishes the Non-Federal Sponsor with the results of the final accounting, the Government shall afford credit against the principal amount for the value, as determined in accordance with Article IV of this Agreement, of lands, easements, rights-of-way, or relocations provided after the period of construction; provided, however, that the amount of credit afforded pursuant to this paragraph shall not exceed the principal amount. Credit shall be afforded against the portion of the principal amount that is outstanding at the time the credit is afforded. If the credit exceeds the portion of the principal amount outstanding at the time credit is afforded, the Government shall afford the excess credit against the portion of the principal amount that the Non-Federal Sponsor has paid at the time the credit is afforded, by refunding such portion to the Non-Federal Sponsor, subject to the availability of funds. In the event existing funds are not available to refund such portion to the Non-Federal Sponsor, the Government shall seek such appropriations as are necessary to make the refund.

5. In the event there is a subsequent period of construction or this Agreement is terminated after the end of the period of construction, the Government, after completion of the construction of the applicable dredged or excavated material disposal facility or facilities, and upon resolution of all relevant proceedings, claims, and appeals, shall amend the final accounting (including recalculating the 10 percent amount), recalculate the principal amount and the principal amount outstanding, and, if the payment period has not elapsed, recalculate the annual installments by amortizing the principal amount outstanding over the remaining portion of the payment period, and shall furnish the Non-Federal Sponsor with the results of the amended final accounting and the aforesaid recalculations. Thereafter, if the payment period has not elapsed, the Non-Federal Sponsor shall pay the aforesaid recalculated installments in lieu of the



previously calculated installments. If the payment period has elapsed, the Non-Federal Sponsor, not later than 90 days after being furnished the aforesaid results, shall pay to the Government any principal amount outstanding by delivering a check payable to "FAO, USAED, Savannah District" to the District Engineer or providing an Electronic Funds Transfer in accordance with procedures established by the Government.

## ARTICLE VII - DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this Agreement, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. The parties shall each pay 50 percent of any costs for the services provided by such a third party as such costs are incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this Agreement.

## ARTICLE VIII - OPERATION AND MAINTENANCE

A. The Government, as it determines necessary, shall operate and maintain the general navigation features and shall be responsible for all financial obligations for operation and maintenance of the general navigation features.

1. The Non-Federal Sponsor hereby authorizes the Government to enter, at reasonable times and in a reasonable manner, upon property that the Non-Federal Sponsor now or hereafter owns or controls for the purpose of operating and maintaining the general navigation features.

2. Operation and maintenance of the general navigation features includes maintaining the inner harbor at -36' mlw and maintaining the entrance channel at -38' mlw and disposal management of Andrews Island Disposal Area.

3. Nothing herein shall convey to the Government any interest in real property owned or controlled by the Non-Federal Sponsor.

4. The Non-Federal Sponsor hereby authorizes the Government to perform all activities on the lands, easements, and rights-of-way provided by the Non-Federal Sponsor to enable the disposal of dredged or excavated material that, in the Government's sole discretion, are necessary for the operation, maintenance, or management of the dredged or excavated material disposal facilities including, but not necessarily limited to, construction, operation, and maintenance of the dredged or excavated material disposal facilities; disposal of dredged or excavated material associated with the construction, operation, and maintenance of the general navigation features. In addition, as between the Government and the Non-Federal Sponsor, for so long as a dredged or excavated material disposal facility is required for the construction,

operation, and maintenance of the general navigation features as determined by the Government, the Government shall have the full authority and exclusive right to operate, maintain, and manage such facility including the exclusive right to remove, use or reuse the materials placed therein for any purpose without charge to the Government.

B. Subject to applicable Federal laws and regulations and for so long as the Project remains authorized, and commensurate with the Government's operation and maintenance of the general navigation features, the Non-Federal Sponsor, at no cost to the Government, shall operate and maintain or cause to be operated and maintained the local service facilities in a manner compatible with the authorized purposes of the Project including dredging or excavation and disposal of material therefrom. The Non-Federal Sponsor shall be responsible for taking all actions to enable such operation and maintenance.

#### ARTICLE IX - HOLD AND SAVE

The Non-Federal Sponsor shall hold and save the Government free from all damages arising from the construction, operation, and maintenance of the Project, any betterments, and the local service facilities, except for damages due to the fault or negligence of the Government or its contractors.

#### ARTICLE X - MAINTENANCE OF RECORDS AND AUDIT

A. Not later than 60 calendar days after the effective date of this Agreement, the Government and the Non-Federal Sponsor shall develop procedures for keeping books, records, documents, or other evidence pertaining to costs and expenses incurred pursuant to this Agreement. These procedures shall incorporate, and apply as appropriate, the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 C.F.R. Section 33.20. The Government and the Non-Federal Sponsor shall maintain such books, records, documents, or other evidence in accordance with these procedures and for a minimum of three years after completion of the accounting for which such books, records, documents, or other evidence were required. To the extent permitted under applicable Federal laws and regulations, the Government and the Non-Federal Sponsor shall each allow the other to inspect such books, records, documents, or other evidence.

B. In accordance with 32 C.F.R. Section 33.26, the Non-Federal Sponsor is responsible for complying with the Single Audit Act of 1984, 31 U.S.C. Sections 7501-7507, as implemented by Office of Management and Budget (OMB) Circular No. A-133 and Department of Defense Directive 7600.10. Upon request of the Non-Federal Sponsor and to the extent permitted under applicable Federal laws and regulations, the Government shall provide to the Non-Federal Sponsor and independent auditors any information necessary to enable an audit of the Non-Federal Sponsor's activities under this Agreement. The costs of any non-Federal audits performed in accordance with this paragraph before the Government furnishes the Non-Federal Sponsor with the results of the final accounting shall be allocated in accordance with the provisions of OMB Circulars A-87 and A-133, and such costs as are allocated to the Project shall

be included in the total cost of construction of the general navigation features and shared in accordance with the provisions of this Agreement.

C. In accordance with 31 U.S.C. Section 7503, the Government may conduct audits in addition to any audit that the Non-Federal Sponsor is required to conduct under the Single Audit Act. Any such Government audits shall be conducted in accordance with Government Auditing Standards and the cost principles in OMB Circular No. A-87 and other applicable cost principles and regulations. The costs of Government audits performed in accordance with this paragraph before the Government furnishes the Non-Federal Sponsor with the results of the final accounting shall be included in the total cost of construction of the general navigation features and shared in accordance with the provisions of this Agreement.

#### ARTICLE XI - FEDERAL AND STATE LAWS

In the exercise of their respective rights and obligations under this Agreement, the Non-Federal Sponsor and the Government agree to comply with all applicable Federal and State laws and regulations, including, but not necessarily limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), as implemented by Department of Defense Directive 5500.11 and Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army". The Non-Federal Sponsor is also required to comply with all applicable federal labor standards requirements including, but not limited to the Davis-Bacon Act (40 U.S.C. 276a, et. seq.), the Contract Work Hours and Safety Standards Act (40 U.S.C. 327, et. seq.) and the Copeland Anti-Kickback Act (40 U.S.C. 276c).

#### ARTICLE XII - RELATIONSHIP OF PARTIES

A. In the exercise of their respective rights and obligations under this Agreement, the Government and the Non-Federal Sponsor each act in an independent capacity, and neither is to be considered the officer, agent, or employee of the other.

B. In the exercise of its rights and obligations under this Agreement, neither party shall provide, without the consent of the other party, any contractor with a release that waives or purports to waive any rights the other party may have to seek relief or redress against that contractor either pursuant to any cause of action that the other party may have or for violation of any law.

#### ARTICLE XIII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, nor any resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

## ARTICLE XIV - TERMINATION OR SUSPENSION

A. If at any time the Non-Federal Sponsor fails to fulfill its obligations under Art. II.B., II.D., II. G., II.N., II.O., II. P., II. Q., VI., VII.B. of this Agreement, the Assistant Secretary of the Army (Civil Works) shall terminate this Agreement or suspend future performance under this Agreement unless he determines that continuation of work on the general navigation features is in the interest of the United States or is necessary in order to satisfy agreements with any other non-Federal interests in connection with the Project.

B. If the Government fails to receive annual appropriations in amounts sufficient to meet its share of scheduled expenditures for the general navigation features for the then-current or upcoming fiscal year, the Government shall so notify the Non-Federal Sponsor in writing, and 60 calendar days thereafter either party may elect without penalty to terminate this Agreement or to suspend future performance under this Agreement. In the event that either party elects to suspend future performance under this Agreement pursuant to this paragraph, such suspension shall remain in effect until such time as the Government receives sufficient appropriations or until either the Government or the Non-Federal Sponsor elects to terminate this Agreement, whichever occurs first.

C. In the event that either party elects to terminate this Agreement pursuant to this Article or Article XV.D. of this Agreement, both parties shall conclude their activities relating to the Project and proceed to a final accounting in accordance with Article VI.D. of this Agreement, or an amended accounting in accordance with Article VI.E.5. of this Agreement, as applicable.

D. Any termination of this Agreement or suspension of future performance under this Agreement in accordance with this Article or Article XV.D. of this Agreement shall not relieve the parties of liability for any obligation previously incurred. Any delinquent payment owed by the Non-Federal Sponsor shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 per centum of the average bond equivalent rate of the 13-week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3-month period if the period of delinquency exceeds 3 months.

## ARTICLE XV - HAZARDOUS SUBSTANCES

A. After execution of this Agreement and upon direction by the District Engineer, the Non-Federal Sponsor shall perform, or cause to be performed, any investigations for hazardous substances that the Government or the Non-Federal Sponsor determines to be necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (hereinafter "CERCLA"), 42 U.S.C. Sections 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Government determines, pursuant to Article III of this Agreement, to be necessary for the construction, operation, and maintenance of the general navigation features. However, for lands, easements, or rights-of-way that the Government determines to be subject to the navigation servitude, only the Government shall perform such investigations unless the

District Engineer provides the Non-Federal Sponsor with prior specific written direction, in which case the Non-Federal Sponsor shall perform such investigations in accordance with such written direction.

1. All actual costs incurred by the Non-Federal Sponsor or the Government before the end of the period of construction or during any subsequent period of construction for such investigations for hazardous substances shall be included in the total cost of construction of the general navigation features and shared in accordance with the provisions of this Agreement, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs.

2. All actual costs incurred by the Non-Federal Sponsor after the period of construction, other than during a subsequent period of construction, for such investigations for hazardous substances shall be considered incidental costs under Article IV.B.4. of this Agreement and be credited pursuant to Article II.I. of this Agreement, subject to an audit in accordance with Article X.C. of this Agreement to determine reasonableness, allocability, and allowability of costs.

3. All actual costs incurred by the Government after the period of construction, other than during a subsequent period of construction, for such investigations for hazardous substances shall be considered financial obligations for operation and maintenance of the general navigation features and shared in accordance with Article VIII.A. of this Agreement.

B. The Non-Federal Sponsor may perform, or cause to be performed, any investigations it determines to be necessary to identify the existence and extent of any hazardous substances regulated under CERCLA that may exist in, on, or under lands, easements, or rights-of-way necessary solely for the construction, operation, and maintenance of the local service facilities. However, for any of those lands that the Government determines to be subject to the navigation servitude, the Non-Federal Sponsor must obtain prior written instructions from the District Engineer regarding the method of testing and must perform such investigations only in accordance with those instructions. The costs of any investigations performed under this paragraph shall be borne entirely by the Non-Federal Sponsor. The Government shall have no obligation under this Agreement for the costs of any investigations performed under this paragraph.

C. In the event it is discovered through any investigation for hazardous substances or other means that hazardous substances regulated under CERCLA exist in, on, or under any lands, easements, or rights-of-way that the Government determines, pursuant to Article III of this Agreement, to be necessary for the construction, operation, and maintenance of the general navigation features, the Non-Federal Sponsor and the Government shall, in addition to providing any other notice required by applicable law, provide prompt written notice to each other, and the Non-Federal Sponsor shall not proceed with the acquisition of the real property interests until both parties agree that the Non-Federal Sponsor should proceed. In the event it is discovered through any means that hazardous substances regulated under CERCLA exist in, on, or under any lands, easements, or rights-of-way necessary for the construction, operation, and maintenance of the local service facilities, the Non-Federal Sponsor and the Government shall, in

addition to providing any other notice required by applicable law, provide prompt written notice to each other.

D. The Government and the Non-Federal Sponsor shall determine whether to initiate construction, operation, and maintenance of the general navigation features, or, if already in construction, operation, and maintenance, whether to continue with construction, operation, and maintenance of the general navigation features, suspend future performance under this Agreement, or terminate this Agreement for the convenience of the Government, in any case where hazardous substances regulated under CERCLA are found to exist in, on, or under any lands, easements, or rights-of-way that the Government determines, pursuant to Article III of this Agreement, to be necessary for the construction, operation, and maintenance of the general navigation features. Should the Government and the Non-Federal Sponsor determine to initiate or continue with construction, operation, and maintenance after considering any liability that may arise under CERCLA, the Non-Federal Sponsor shall be responsible, as between the Government and the Non-Federal Sponsor, for the costs of clean-up and response, to include the costs of any studies and investigations necessary to determine an appropriate response to the contamination. Such costs shall not be considered a part of the total cost of construction of the general navigation features. In the event the Non-Federal Sponsor fails to provide any funds necessary to pay for clean up and response costs or to otherwise discharge the Non-Federal Sponsor's responsibilities under this paragraph upon direction by the Government, the Government may, in its sole discretion, either terminate this Agreement for the convenience of the Government, suspend future performance under this Agreement, or continue work on the general navigation features. The Government shall have no obligation under this Agreement for the costs of any clean-up and response, to include the costs of any studies and investigations necessary to determine an appropriate response to the contamination, on lands, easements, or rights-of-way necessary solely for the local service facilities.

E. The Non-Federal Sponsor and the Government shall consult with each other in accordance with Article V of this Agreement in an effort to ensure that responsible parties bear any necessary clean up and response costs as defined in CERCLA. Any decision made pursuant to paragraph D. of this Article shall not relieve any third party from any liability that may arise under CERCLA.

F. To the maximum extent practicable, the Government and the Non-Federal Sponsor shall perform their responsibilities under this Agreement in a manner that will not cause liability to arise under CERCLA.

## ARTICLE XVI - NOTICES

A. Any notice, request, demand, or other communication required or permitted to be given under this Agreement shall be deemed to have been duly given if in writing and either delivered personally or by telegram or mailed by first-class, registered, or certified mail, as follows:

If to the Non-Federal Sponsor:  
Commissioner  
Georgia Department of Transportation  
#2 Capitol Square, S.W.  
Atlanta, Georgia 30334-1002

If to the Government:

District Engineer  
U.S. Army Corps of Engineers  
Savannah District  
P. O. Box 889  
Savannah, Georgia 31402

B. A party may change the address to which such communications are to be directed by giving written notice to the other party in the manner provided in this Article.

C. Any notice, request, demand, or other communication made pursuant to this Article shall be deemed to have been received by the addressee at the earlier of such time as it is actually received or seven calendar days after it is mailed.

#### ARTICLE XVII - CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

#### ARTICLE XVIII - HISTORIC PRESERVATION

A. The costs of identification, survey, and evaluation of historic properties incurred before the end of the period of construction or during a subsequent period of construction shall be included in the total cost of construction of the general navigation features and shared in accordance with Articles II.F. and II.I. of this Agreement.

B. The costs of identification, survey, and evaluation of historic properties incurred after the period of construction, other than during a subsequent period of construction, shall be considered financial obligations for operation and maintenance of the general navigation features and shared in accordance with Article VIII.A. of this Agreement.

C. As specified in Section 7(a) of Public Law 93-291 (16 U.S.C. Section 469c(a)), the costs of archeological data recovery activities associated with historic preservation shall be borne entirely by the Government and shall not be included in the total cost of construction of the general navigation features, up to the statutory limit of one percent of the total amount authorized to be appropriated to the Government for the construction of the general navigation features.

D. The Government shall not incur costs for archeological data recovery activities that exceed the statutory one percent limit specified in paragraph C. of this Article unless and until the Assistant Secretary of the Army (Civil Works) has waived that limit in accordance with Section 208(3) of Public Law 96-515 (16 U.S.C. Section 469c-2(3)).

1. Any costs of archeological data recovery activities that exceed the one percent limit and are incurred before the end of the period of construction or during a subsequent period of construction shall be included in the total cost of construction of the general navigation features and shared in accordance with Articles II.F. and II.I. of this Agreement.

2. Any costs of archeological data recovery activities that exceed the one percent limit and are incurred after the period of construction, other than during a subsequent period of construction, shall be considered financial obligations for operation and maintenance of the general navigation features and shared in accordance with Article VIII.A. of this Agreement.

#### ARTICLE XIX - THIRD PARTY RIGHTS, BENEFITS, OR LIABILITIES

Nothing in this Agreement is intended, nor may be construed to create any rights, confer any benefits, or relieve any liability, of any kind whatsoever in any third person not party to this Agreement.

#### ARTICLE XX - NON-LIABILITY OF OFFICERS AND EMPLOYEES

Neither any officer, agent, consultant, or employee of the Non-Federal Sponsor, nor any officer, agent, consultant, or employee of the Government, may be charged personally with any liability, or held liable under the terms or provisions of this Agreement, or because of its execution or attempted execution, or because of any breach, attempted breach, or alleged breach thereof, except as provided in Section 912 of the Water Resources Development Act of 1986, Public Law 99-662, or other applicable law.

#### ARTICLE XXI - SECTION 902 PROJECT COST LIMITS

The Non-Federal Sponsor has reviewed the provisions set forth in Section 902 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, and understands that Section 902 establishes the maximum cost of the Project and the local service facilities. Notwithstanding any other provision of this Agreement, the Government shall not make a new Project financial obligation, make a Project expenditure, or afford credit toward total cost of construction of the general navigation features for the value of any contribution provided by the Non-Federal Sponsor, if such obligation, expenditure, or credit would result in the total cost of construction of the general navigation features plus the value of any contribution provided by the Non-Federal Sponsor in accordance with Article III of this Agreement exceeding this maximum amount, unless otherwise authorized by law. On the effective date of this Agreement, this maximum amount is estimated to be \$62,381,000, as calculated in accordance with ER 1105-2-



100 using October 1, 2001 price levels and allowances for projected future inflation. The Government shall adjust this maximum amount in accordance with Section 902 of the Water Resources Development Act of 1986, Public Law 99-662, as amended.

## ARTICLE XXII - OBLIGATIONS OF FUTURE APPROPRIATIONS

Nothing herein shall constitute, nor be deemed to constitute, an obligation of future appropriations by the Legislature of the State of Georgia.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, which shall become effective upon the date it is signed by the District Engineer, Savannah District.

DEPARTMENT OF THE ARMY

BY: Roger A. Gerber  
Roger A. Gerber  
Colonel, US Army  
District Engineer

DATE: 5 April 2002

GEORGIA DEPARTMENT OF  
TRANSPORTATION

BY: Tom Coleman, Jr.  
Tom Coleman, Jr.  
Commissioner  
State of Georgia,  
Department of Transportation


DATE: April 2, 2002

# CERTIFICATE OF AUTHORITY

I, Sandra S. Burgess, do hereby certify that I am the principal legal officer of the Georgia Department of Transportation, that the Georgia Department of Transportation is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the Department of the Army and the Georgia Department of Transportation in connection with the Brunswick Harbor Deepening Project, and to pay damages in accordance with the terms of this Agreement, if necessary, in the event of the failure to perform, as required by Section 221 of Public Law 91-611 (42 U.S.C. Section 1962d-5b), and that the persons who have executed this Agreement on behalf of the Georgia Department of Transportation have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this

2nd day of April 2002.

  
Sandra Story Burgess  
Director of Legal Services  
State of Georgia  
Department of Transportation  
Atlanta, Georgia

## CERTIFICATION REGARDING LOBBYING

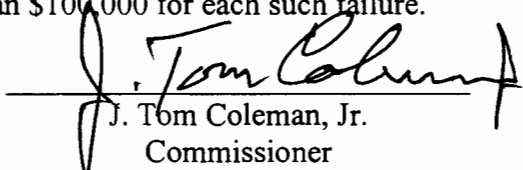
The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

  
J. Tom Coleman, Jr.  
Commissioner  
State of Georgia, Department of Transportation

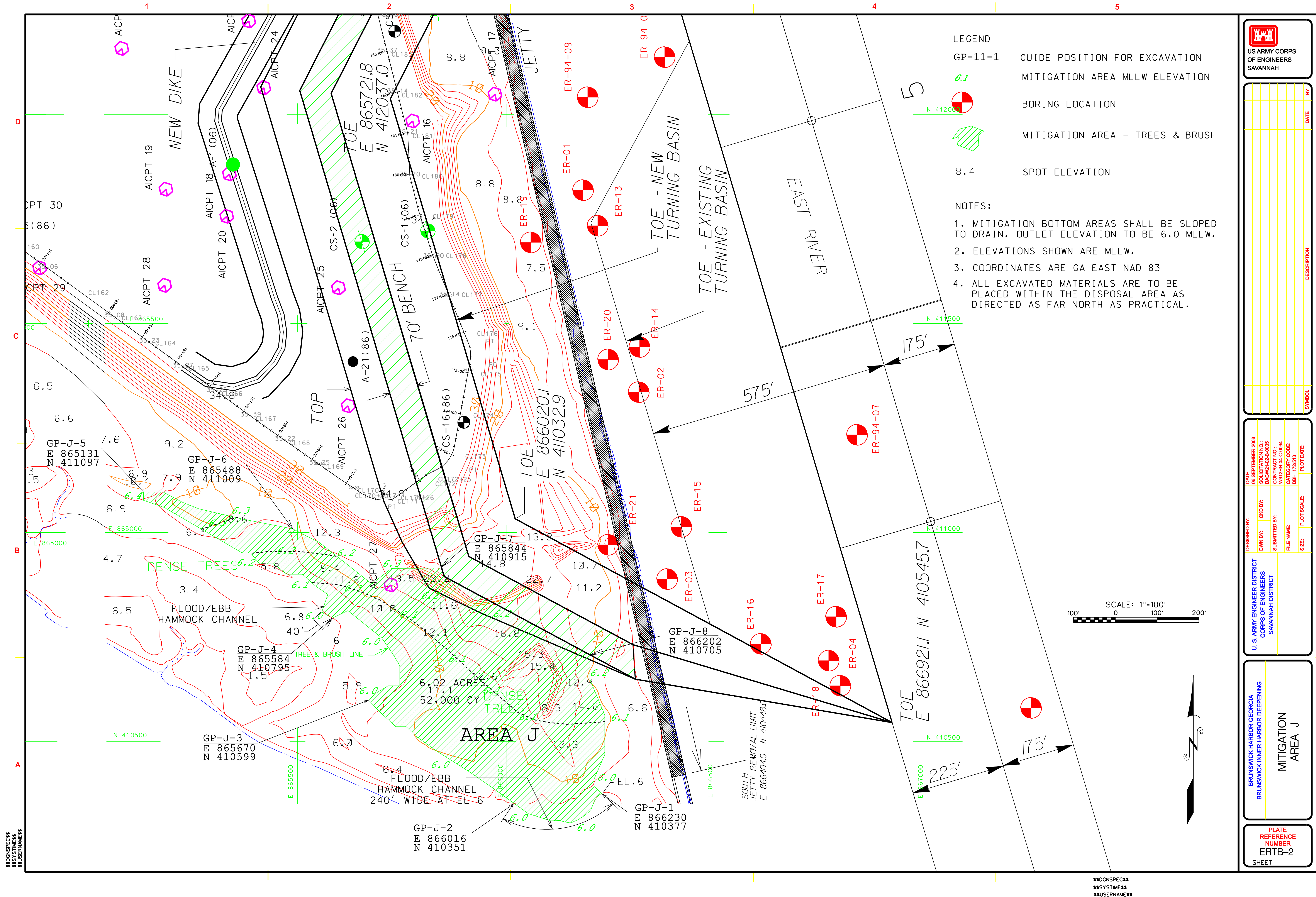
DATE: April 2, 2002

# APPENDIX B





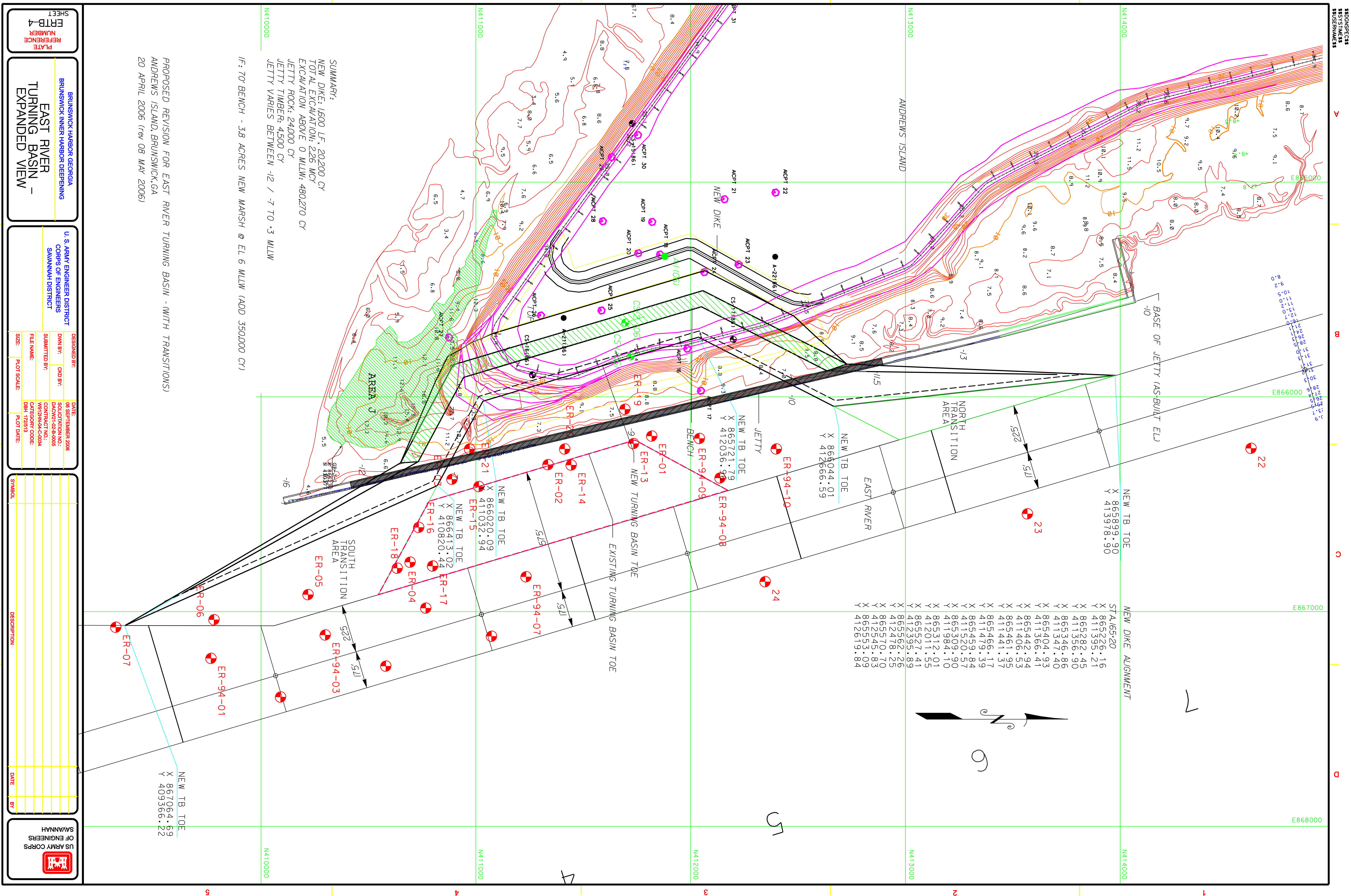




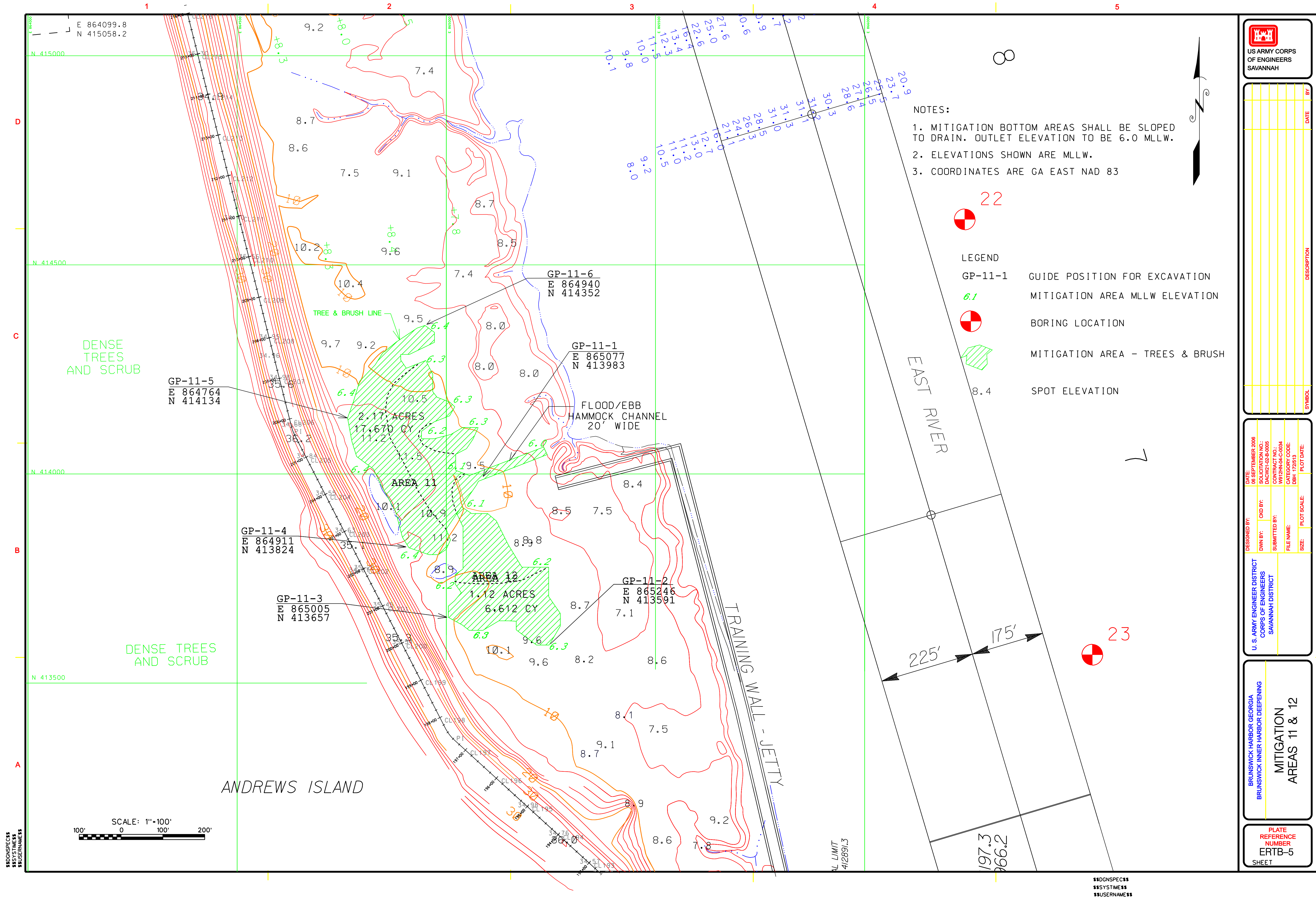








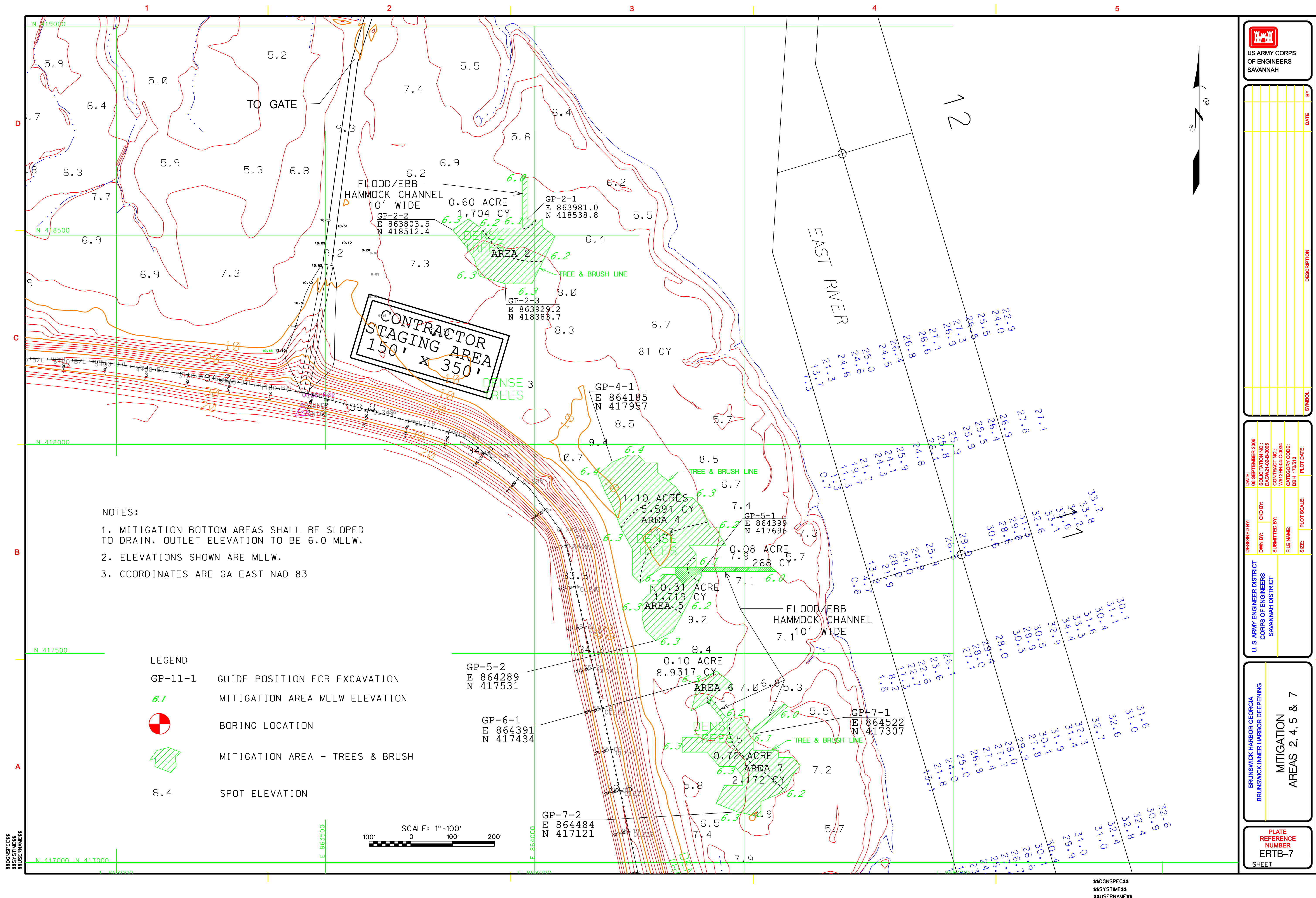












# APPENDIX C



US Army Corps  
of Engineers

OFFICE OF THE SAVANNAH DISTRICT  
VALUE ENGINEERING OFFICER

***VALUE ENGINEERING STUDY SUMMARY REPORT***

***BRUNSWICK HARBOR DEEPING  
EAST RIVER TURNING BASIN RELOCATION  
PROPOSAL***

***BRUNSWICK, GA***

Sponsored By: The U.S. Army  
Engineering District, Savannah

Value Engineering Report No. 1  
VES 07-01

October 2006

**DOD SERVICE:** USACE      **VALUE ENGINEERING OFFICER:** John T. Blewett, P.E.

**Value Engineering Study Report on**

***BRUNSWICK HARBOR DEEPING  
EAST RIVER TURNING BASIN RELOCATION  
PROPOSAL***

***BRUNSWICK, GA***

**OCTOBER 2006**

**STUDY SPONSOR:** The U.S. Army Engineering District, Savannah

**VALUE ENGINEERING FIRM NAME:**

Savannah District Value Engineering Study Team

**ADDRESS:** 100 W. Oglethorpe Ave  
Savannah, GA  
31401

**PHONE:** (912) 652-5263

**VALUE ENGINEERING STUDY TEAM LEADER:** John T. Blewett, P.E.

**VALUE ENGINEERING STUDY TEAM MEMBERS**

James McTiernan, Civil Engineer  
Cardwell Smith, Geologist

Grant Clark, Geotechnical Engineer

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VALUE ENGINEERING TEAM STUDY

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VALUE ENGINEERING TEAM STUDY

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PROJECT DESCRIPTION AND BACKGROUND

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PROJECT TITLE:	Brunswick Harbor Deeping - East River Turning Basin Relocation Proposal
PROJECT LOCATION:	Brunswick, GA

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The authorized Brunswick Harbor Deeping Project includes construction of a new turning basin in East River and wetland mitigation on Jekyll Island. A wider and deeper turning basin in East River is required to support the increase traffic and the increased size of the ships delivering loading cargo to the port of Brunswick. The wetland mitigation is required to replace wetlands that would be lost primarily during construction of the new turning basin. The purpose of this study is to evaluate construction of an alternate turning basin for East River in support of Brunswick Harbor Deeping Project and whether associated wetland mitigation costs could be reduced.

The WRDA 1999, Section 101(a)(19) authorized a project for navigation at Brunswick Harbor, Georgia, in accordance with the report of the Chief of Engineers, dated October 6, 1990. The project provides for deepening of the harbor to provide a 36-foot deep inner harbor and a 38-foot deep outer harbor navigation channel. The authorized project cost was \$50,717,000 with the Federal share of \$32,966,000, and a non-Federal share of \$17,751,000.

In September 2003, Savannah District prepared the Post Authorization Change (PAC) Report for Brunswick Harbor, Georgia, documenting the need to increase the authorized total project cost from \$78,879,000 to \$96,277,000. The Water Resources Development Act of 1999 (WRDA 99) initially authorized the project at a total project cost of \$50,717,000. Based on a January 2003 Savannah District PAC, the 2003 Consolidated Appropriations Resolution subsequently increased the total project cost to \$78,879,000, subject to a favorable report of the Chief of Engineers. A PAC prepared in January 2003 is under internal review. An additional increase is necessary based on results from changes to the Corps of Engineers Dredging Estimating Program (CEDEP) that more accurately reflect increases in industry dredging costs.

The proposed savings at the completion of the VE study was \$15,035,316, while the quality improvements were \$82,175 and the net cost savings of \$14,953,141.

The proposed savings at the completion of the VE presentation was \$10,121,578, while the quality improvements were \$1,920,870 and the net cost savings of \$8,200,708.

Also see Supporting Documents Appendices for project Cost Model.

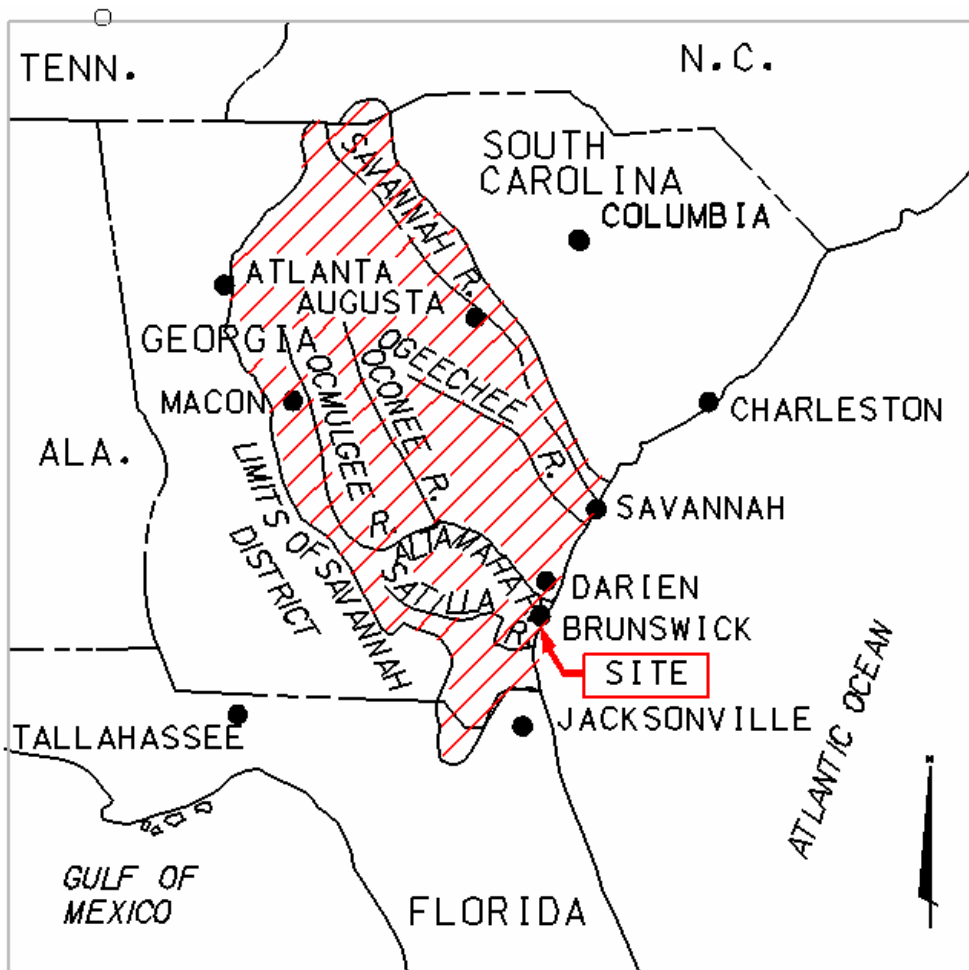


VALUE ENGINEERING TEAM STUDY

PROJECT DESCRIPTION AND BACKGROUND

PROJECT TITLE:	Brunswick Harbor Deeping - East River Turning Basin Relocation Proposal
PROJECT LOCATION:	Brunswick, GA

**LOCATION MAP**



VICINITY MAP

NOT TO SCALE



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## VALUE ENGINEERING TEAM STUDY

### EXECUTIVE SUMMARY

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The Value Engineering Study was conducted on the Brunswick Harbor Deeping - **East River Turning Basin Relocation Proposal at Brunswick, GA on 18-20 October 2006**. The study was based on the Bid Package Scope of Work for Modification P00016. The VE team was comprised of members of Savannah District.

Value Engineering (VE) is a process used to study the functions a project is to achieve. VE took a critical look at how these functions are proposed to be met by the design team and it identifies alternative ways to achieve the equivalent function while increasing the value and the benefit ratio of the project. In the end, it is hoped that the project will realize a reduction in cost, but increased value is the focus of the process, rather than simply reducing cost. The project was studied using the Corps of Engineers standard Value Engineering (VE) methodology, consisting of five phases:

Information Phase: The Team studied drawings, figures, descriptions of project work, and cost estimates to fully understand the work to be performed and the functions to be achieved. **Cost Models (see Appendix C)** were compared to determine areas of relative high cost to ensure that the team focused on those parts of the project that offered the most potential for cost savings.

Speculation Phase: The Team speculated by conducting brainstorming sessions to generate ideas for alternative designs. All team members contributed ideas and critical analysis of the ideas was discouraged (**see Appendix B**).

Analysis Phase: Evaluation, testing and critical analysis of all ideas generated during speculation was performed to determine potential for savings and possibilities for risk. Ideas were ranked by priority for development. Ideas that did not survive critical analysis were deleted.

Development Phase: The ideas that survived the analysis phase were developed into written proposals by VE team members during an intensive technical development session. Proposal descriptions, along with sketches, technical support documentation, and cost estimates were prepared to support implementation of ideas. Additional VE Team Comments were included for items of interest that were not developed as proposals, and these comments follow the study proposals.

Presentation Phase: Presentation is a two-step process. First, the VE Study Report will be distributed for review to all appropriate project supporters and decision-makers. Review comments will be coordinated for decision on any proposals recommended by the study report. Final coordination may include a formal Presentation conference for recommendation of actions to be taken on specific VE proposals.

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VALUE ENGINEERING TEAM STUDY

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SUMMARY OF PROPOSALS

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<b>Proposal No.</b>	<b>PROPOSALS</b>	<b>PROPOSED SAVINGS</b>	<b>ACCEPTED OR REJECTED</b>
1	Enlarge existing turning basin in lieu of building the new turning basin in the upper East River as authorized by Congress.	<b>\$1,663,828</b>	<b>ACCEPTED</b>
2	Add upstream and downstream transition to the turning basin to enhance the operation of the turning basin.	<b>Cost Add \$1,838,695</b>	<b>ACCEPTED</b>
3	Make transitions to turning basin a bid option.	<b>Cost Add \$1,838,695</b>	<b>ACCEPTED</b>
4	Abandon Jeykll Island mitigation plan and mitigate for the project in hammocks adjacent to project site.	<b>\$8,457,750</b>	<b>ACCEPTED</b>
5	Increase width of slope stability bench from 30' to 70', add grassing requirement and incorporate into the mitigation plan to satisfy the acreage requirements.	<b>COST ADD \$82,175</b>	<b>ACCEPTED</b>
6	Construct the required dike raising on Andrews Island concurrent with the turning basin construction activity	<b>COMMENT</b>	<b>REJECTED</b>

## VALUE ENGINEERING PROPOSAL

**PROPOSAL NO:** 1

**PAGE NO: 1 OF 4**

**DESCRIPTION:** Enlarge existing turning basin in lieu of building the new turning basin in the upper East River as authorized by Congress.

---

**ORIGINAL DESIGN:** The authorized project includes the construction of a new East River turning basin as part of the general recommended improvements in the Report of the Chief of Engineers, dated October 6, 1998. The location of the proposed turning basin is shown in Figure 1. This location, between East River Station 7+000 and 10+000, was determined to be the most desirable by the pilots and did not require excavation of the existing dike surrounding Andrews Island. The 18.1 disturbed acres of marsh was to be mitigated by the creation of 59 acres of marsh on Jekyll Island.

**PROPOSED DESIGN:** The proposed design would be an enlargement of the existing turning basin (see Figure 2). The location of the existing turning basin is between Station 3+500 and 5+500. The enlarged turning basin would extend northward upstream and westward towards Andrews Island.

### **ADVANTAGES:**

- Proposed location will disturb 5 +/- acres of marsh versus 18.1 acres in original plan.
- Mitigation for the disturbed marsh can be done on site (In-kind / In-basin) rather than having to find a larger mitigation site required under the original plan.
- By dredging at the existing turning basin site, the amount of material to be dredged is approximately 350,000 CY less than at the original site. This will add to the life of the Andrews Island disposal area.
- The proposed design and subsequent mitigation will result in a significant shorter construction period. The estimated minimum time for mitigation alone for the Jekyll Island site was 18 months.
- The material being excavated for mitigation in the proposed design can be used to build dikes on Andrews Island. The material in original design from Jekyll was not suitable for such activities.

### **DISADVANTAGES:**

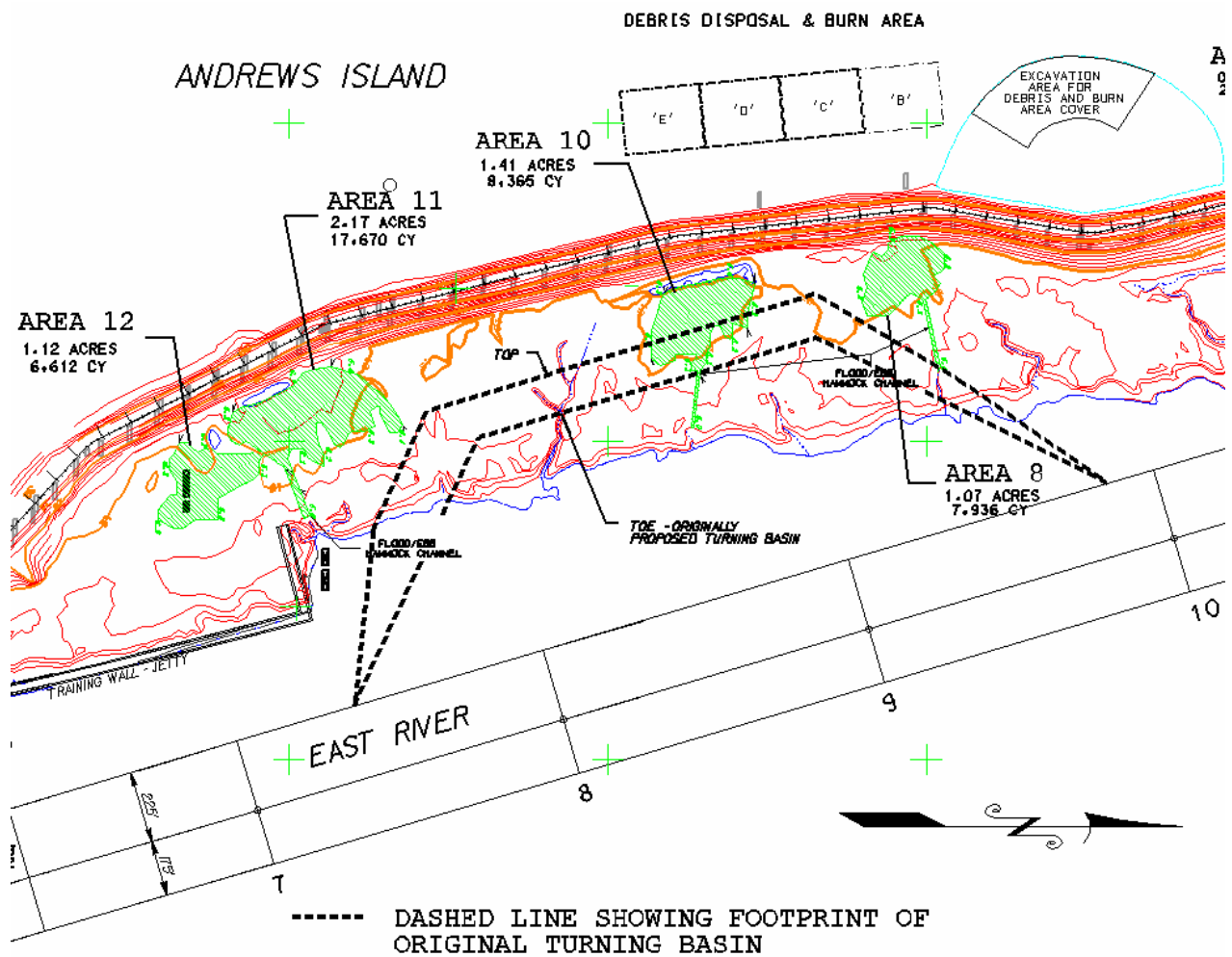
- New location will require the removal of a portion of an existing jetty
- New location would require excavation of the dike confining the Andrews Island dredged material disposal facility.

### **JUSTIFICATION/ADDITIONAL NOTES**

The mitigation plan in the authorized project was based on an agreement originally made with the Jekyll Island Authority that would have allowed the dredged material taken from the mitigation site to be disposed of elsewhere on Jekyll Island at minimal costs. Since this is no longer an option and the cost to transport the material offsite has been estimated at more than ten times the original disposal costs, other solutions must be investigated.

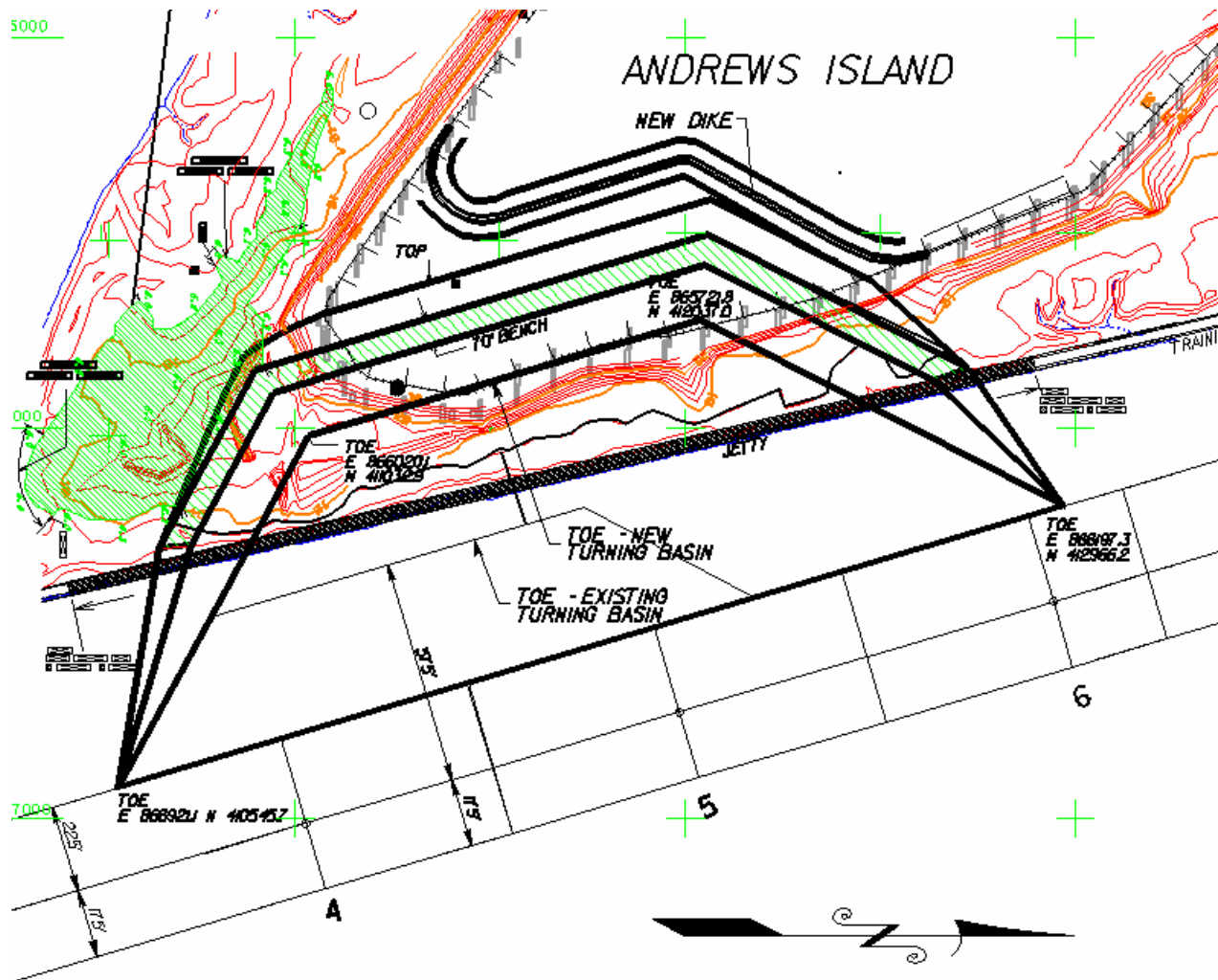
Figure 1

Turning Basin in Authorized Project



### Figure 2

### Proposed Enlargement of Existing Turning Basin



— SOLID LINE SHOWING FOOTPRINT OF  
THE ENLARGED EXISTING TURNING BASIN

# VALUE ENGINEERING PROPOSAL

PROPOSAL NO: 1

PAGE NO: 4 OF 4

<b>DELETIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
<b>Dredging Original East River Turning Basin</b>				\$0
				\$0
Unclassified Dredging up to 1,877,000 CY	CY	1,877,000	\$2.79	\$5,236,830
Unclassified Dredging all over 1,877,000 CY	CY	120,000	\$2.44	\$292,800
				\$0
<b>Mitigation for Original ERTB</b>				\$0
				\$0
Excavation/Disposal of Material-Marsh Growth	LS	1	\$8,917,000.00	\$8,917,000
				\$0
<b>NOTE: Unit costs for dredging/excavation for the New ERTB reflect additional costs due to the land-based excavation operations.</b>				\$0
				\$0
				\$0
(Unit costs were taken from the summary estimate sheet provided at the VE Study.)	Total Deletions			\$14,446,630
<b>ADDITIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
<b>Dredging/Excavation New ERTB</b>				\$0
Excavation Above 0.0 MLLW	CY	629,270	\$5.90	\$3,712,693
Excavation 0.0 to -38.0 (First 1,192,490)	CY	1,192,490	\$5.55	\$6,618,320
Excavation 0.0 to -38.0 (All over 1,192,490)	CY	2,000	\$5.55	\$11,100
Jetty Removal	LS	1	\$516,700.00	\$516,700
Clearing (First 36 acres, Dike and Hammocks)	AC	36	\$2,615.00	\$94,140
Clearing (All over 36 acres)	AC	1	\$2,615.00	\$2,615
<b>Mitigation for New ERTB</b>				\$0
Excavation for Hammock Creation	CY	134,000	\$16.00	\$2,144,000
Excavation (All over 134,000 CY)	CY	1,000	\$16.00	\$16,000
				\$0
				\$0
	Total Additions			\$13,115,568
Net Cost Decrease/Increase				\$1,331,063
	Mark-ups	25.0%		\$332,766
Total Potential Net Income				\$1,663,828



## VALUE ENGINEERING PROPOSAL

**PROPOSAL NO:** 2

**PAGE NO:** 1 OF 3

**DESCRIPTION:** Add north and south transition areas to the turning basin to enhance ship operations.

---

**ORIGINAL DESIGN:** The original design places a new, 1100' by 1100' turning basin about 3000' upstream of the existing turning basin, offering additional maneuver distance for slowing ships that are coming in at the relatively high speeds needed to negotiate the cross currents in the entrance channel. Proposal No. 1 enlarges the existing turning basin from 1000' by 750' to 1100' by 1100' but does not provide the needed distance to slow all of the ships. This will require about half of the ships to overrun the turning basin initially, then re-enter from upstream, adding 40 minutes to the maneuvering time, on average, for these ships.

**PROPOSED DESIGN:** Add a north (upstream) transition area and a south (downstream) transition area to the existing, enlarged turning basin, see Figure 1. Side slopes for both of the transition areas will be the same as the enlarged turning basin's side slopes, 3H:1V.

The south transition area will extend from about station 4+000 to station 2+500 and extend out from 0 to 350' into the channel at the project depth of -38 feet, msl.

The north transition area will extend from about station 5+800 to station 7+100 and extend out from 0 to 190' into the channel at the project depth of -38 feet.

**ADVANTAGES:** The transition areas will facilitate safe and efficient ship operations.

The south transition area will effectively widen the entrance to the East River Channel; increasing maneuvering space, allowing for a greater range of approach angles, wider swept paths and slower approach speeds. This will be accomplished by removing a knoll that would otherwise jut out as much as 350' into the entrance channel. This proposal effectively enlarges the narrowest point on the entrance channel from 400' to 600'.

The north transition area offers additional maneuvering space for ships upstream of the turning basin. This will be accomplished by removing a knoll that would otherwise jut out about 190 feet into the main channel.

**DISADVANTAGES:** An estimated 526,000 cubic yards of dredged material, 1400 cubic yards of over-depth dredged material and about 4 days of dredging time adjacent to the existing turning basin will be required for construction. The transitions will increase future maintenance dredging requirements in the East River by about 330,000 and 125,000 square feet in the south and north transition areas, respectively. Additional environmental clearances would be required.

**JUSTIFICATION/ADDITIONAL NOTES:** No borings were drilled in or near the north transition area. However, soil test borings were drilled for earlier projects adjacent to the south transition area. The logs of the borings drilled near the south transition area include ER-3, -7, -16 and -18. Two borings, ER-5 and ER-6 were drilled in the south transition area. No distinction has been made between soft/loose and hard/dense soils or rock that may be encountered when dredging for the transition areas. Unit costs reflect those estimated for dredging in the channel and the turning basin. Removal limits indicated for the training wall in proposal No. 1 consider future construction of the transition areas since access will be limited once the center portion of the wall is removed.

**PAGE NO: 2 OF 3**

[illegible]

# VALUE ENGINEERING PROPOSAL

**PROPOSAL NO: 2**

**PAGE NO: 3 OF 3**

COST ESTIMATE WORKSHEET				
PROPOSAL NO. 2				
Add north and south transition areas to the turning basin to enhance ship operations.				
<b>DELETIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
	CY	0	\$0.00	\$0
	CY	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	LS	0	\$0.00	\$0
				\$0
				\$0
				\$0
				\$0
				\$0
Total Deletions				\$0
<b>ADDITIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
Dredge transitions to project depth (-38')	CY	526,000	\$2.79	\$1,467,540
Overdepth dredging in transition areas (-40')	CY	1,400	\$2.44	\$3,416
	TONS	0	\$0.00	\$0
	TONS	0	\$0.00	\$0
	TONS	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	CY	0	\$0.00	\$0
				\$0
				\$0
				\$0
				\$0
Total Additions				\$1,470,956
Net Cost Decrease/Increase				-\$1,470,956
	Mark-ups	25.0%		-\$367,739
Total Potential Net Income				-\$1,838,695

## VALUE ENGINEERING PROPOSAL

**PROPOSAL NO:** 3

**PAGE NO: 1 OF 2**

**DESCRIPTION:** Make transitions for the turning basin separate bid options.

---

**ORIGINAL DESIGN:** Proposal No. 2 includes both the north and south transition areas.

**PROPOSED DESIGN:** This proposal separates the operationally more important south transition area from the smaller, north transition area.

**ADVANTAGES:** Allows for incremental improvement to the project turning basin based on benefits and budget.

**DISADVANTAGES:** none

**JUSTIFICATION/ADDITIONAL NOTES**

# VALUE ENGINEERING PROPOSAL

PROPOSAL NO: 3

PAGE NO: 2 OF 2

COST ESTIMATE WORKSHEET				
PROPOSAL NO. 3				
Make transitions for the turning basin separate bid options.				
<b>DELETIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
	CY	0	\$2.79	\$0
	CY	0	\$2.44	\$0
	CY	0	\$0.00	\$0
	CY	0	\$2.79	\$0
	CY	0	\$2.44	\$0
	SF	0	\$0.00	\$0
	LS	0	\$0.00	\$0
				\$0
				\$0
				\$0
				\$0
				\$0
	Total Deletions			\$0
<b>ADDITIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
28AA Dredging south transition area, first 314,000 cy	CY	314,000	\$2.79	\$876,060
28AB All over 314,000 cy	CY	1,000	\$2.44	\$2,440
	CY	0	\$0.00	\$0
29AA Dredging north transition area, first 220,400 cy	CY	212,000	\$2.79	\$591,480
29AB All over 212,000 cy	CY	400	\$2.44	\$976
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	CY	0	\$0.00	\$0
				\$0
				\$0
				\$0
				\$0
	Total Additions			\$1,470,956
Net Cost Decrease/Increase				-\$1,470,956
	Mark-ups	25.0%		-\$367,739
Total Potential Net Income				-\$1,838,695

## VALUE ENGINEERING PROPOSAL

**PROPOSAL NO:** 4

**PAGE NO: 1 OF 2**

**DESCRIPTION:** Abandon Jekyll Island mitigation plan and for alternate plan.

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**ORIGINAL DESIGN:** The original design calls for constructing a new turning basin upstream of the existing basin. This plan would result in the loss of 18.1 acres of high quality salt marsh. After reviewing various mitigation alternatives, it was decided to restore a portion of a site on Jekyll Island where high quality marsh was previously dredged and then filled as part of a failed marina development.

**PROPOSED DESIGN:** The proposed plan would mitigate impacted marsh areas by removing several hammocks adjacent to the Andrews Island disposal area dikes by excavating old dredge material mounds to marsh elevation. The revised turning basin design would also include the construction of a marsh elevation “bench” at the rear of the turning basin which would promote the development of additional marsh and add to the mitigation acreage.

**ADVANTAGES:** The proposed plan would reduce the impact to high quality Spartina marsh and place mitigation in the same watershed as the impacted marsh. The proposed plan would be a considered a minor modification to the project’s environmental clearances. Recent coordination with natural resource agencies reveals their support for this proposal. The hammock areas along the Andrews Island dikes would be more readily accessible to construction and excavated materials could be deposited nearby in the disposal area. The proposed mitigation plan would reduce the cost of mitigation by about \$6.75 million.

**DISADVANTAGES:** The proposed plan would require negotiations with the Contractor, since he bid on a different mitigation plan.

### **JUSTIFICATION/ADDITIONAL NOTES**

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**PROPOSAL NO:** 4

**PAGE NO:** 20F 2

19

## VALUE ENGINEERING PROPOSAL

**PROPOSAL NO:** 5

**PAGE NO: 1 OF 4**

**DESCRIPTION:** Increase width of slope stability bench from 30' to 70', add grassing requirement and incorporate into the mitigation plan to satisfy the acreage requirements.

---

**ORIGINAL DESIGN:** The original design of the new East River turning basin (ERTB) included a 30 foot wide slope stability bench. This bench was determined to be necessary in order to maintain the integrity of the dike that makes up part of the disposal area on Andrews Island.

**PROPOSED DESIGN:** The proposed design calls for an additional 40 feet of width to be added to the original design and the elevation of the bench to be set so as to facilitate the generation of high quality Spartina marsh. Figure 1 shows the bench in plan view and Figure 2 show the cross-section view at River Station 5+000.

### **ADVANTAGES:**

- Approximately 4 acres of bench can be used to satisfy mitigation requirements.
- Integrating mitigation with construction project will save time and overall costs.

### **DISADVANTAGES:**

- Small upfront costs associated with the marsh planting, however, this pays large dividends in the long run versus having to find other mitigation sites.

### **JUSTIFICATION/ADDITIONAL NOTES**

Note: The width of the bench has been optimized. Calculations were done to balance the cost of additional excavation against the mitigation costs. A 100' wide bench proved to be too costly whereas the additional mitigation costs of providing only a 50' wide bench were greater than the additional excavation cost associated with widening the bench to 70'. After determining the amount of available acreage from the hammock restoration sites, it was calculated that the bench would need to be 62' in order to satisfy the mitigation requirements.

- The 70' wide bench will satisfy the mitigation requirements and will allow for all mitigation to be done In-Kind and In-Basin. Without this feature, off-site mitigation sites will need to be found and the costs for these sites will add significantly to the cost of the project.



Figure 1

Plan View of 70' Bench

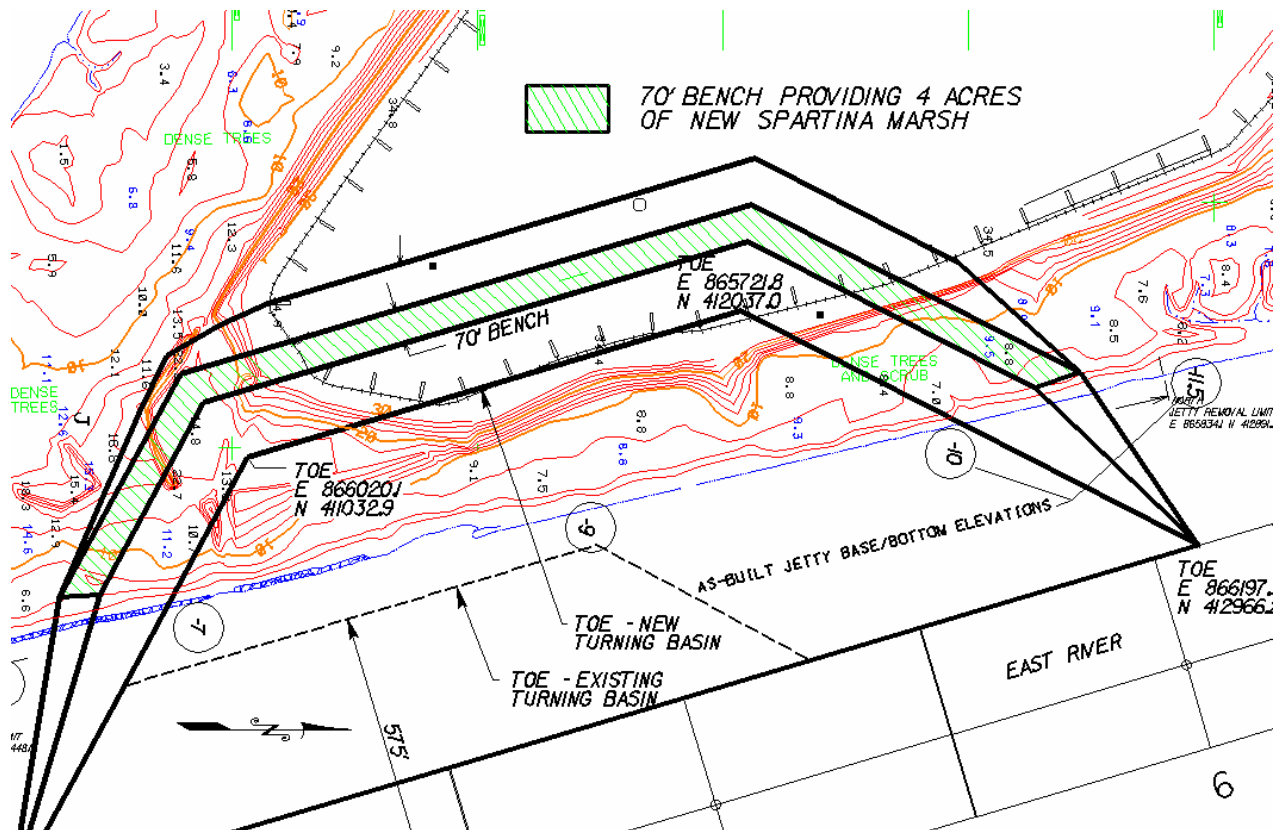
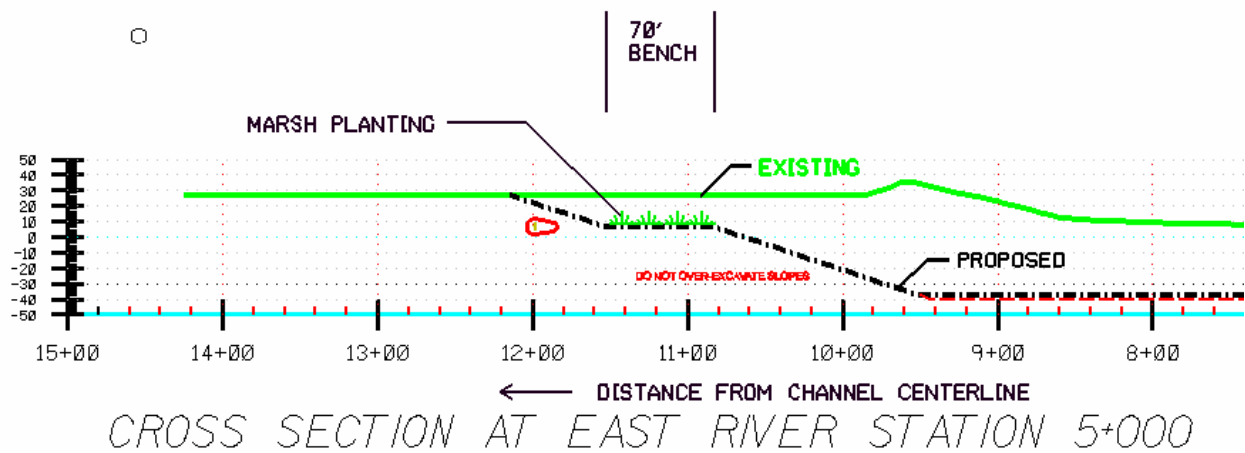


Figure 2

Cross-Section View of 70' Bench at River Station 5+000



**VALUE ENGINEERING PROPOSAL****PROPOSAL NO: 5****PAGE NO: 4 OF 4**

<b>COST ESTIMATE WORKSHEET</b>				
PROPOSAL NO. 5				
<b>DELETIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
	CY	0	\$0.00	\$0
	CY	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	LS	0	\$0.00	\$0
				\$0
				\$0
				\$0
				\$0
				\$0
	Total Deletions			\$0
<b>ADDITIONS</b>				
ITEM	UNITS	QUANTITY	UNIT COST	TOTAL
Marsh Planting (3.8 Acres Required)	AC	4	\$17,300.00	\$65,740
	TONS	0	\$0.00	\$0
	TONS	0	\$0.00	\$0
	TONS	0	\$0.00	\$0
	TONS	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	SF	0	\$0.00	\$0
	CY	0	\$0.00	\$0
				\$0
				\$0
				\$0
				\$0
	Total Additions			\$65,740
Net Cost Decrease/Increase				-\$65,740
	Mark-ups	25.0%		-\$16,435
Total Potential Net Income				-\$82,175

**Comment No. 6 Construct the required dike raising on Andrews Island concurrent with the turning basin construction activity:**

The current plan, as indicated in Paragraph 4 and Drawing ERTB-2 of the Scope of Work for Modification P00016, is to pump the dredged material into the Andrews Island disposal site behind the new dike as far north as practical. Since there will be a dike raising project in the near future, the VE team thought it might make sense to combine the disposal of the dredged material with the dike raising operation. It was mentioned in the course of the VE study that the material would probably be suitable for dike raising efforts. Further consideration as to where the material is placed could save time, money, and effort for the dike raising project.

# **SUPPORTING DOCUMENTS**

# **CONTACT DIRECTORY**



# ATTENDEE SIGN-IN SHEET

PROJECT: **Andrews Island Turning Basin**      DATE: **18**  
 INSTALLATION: **Brunswick, GA**      TIME: **1300/0830**  
 LINE ITEM: **P00016**      PLACE: **Savannah, GA**  
 FISCAL YEAR: **FY-**      TYPE OF CONF: **VALUE ENGINEERING STUDY**

Name	Position	Organization	Telephone And email address
John T. Blewett, P.E.	District Value Engineer	CESAS-EN-V	912-652-5263 <a href="mailto:john.t.blewett@sas02.usace.army.mil">john.t.blewett@sas02.usace.army.mil</a>
James McTiernan	Civil Engineer	CESAS-EN-DGO	912-652-5532 <a href="mailto:James.mctiernan@sas02.usace.army.mil">James.mctiernan@sas02.usace.army.mil</a>
Cardwell Smith	Geologist	CESAS-EN-GG	912-652-5674 <a href="mailto:h.cardwellsmith@sas02.usace.army.mil">h.cardwellsmith@sas02.usace.army.mil</a>
Grant Clark	Geotechnical Engineer	CESAS-EN-GS	912-652-5686 <a href="mailto:Grant.w.clark@sas02.usace.army.mil">Grant.w.clark@sas02.usace.army.mil</a>
Alan Garrett	PM	CESAS-PM-CM	912-652-5172 <a href="mailto:Thomas.a.garrett@sas02.usace.army.mil">Thomas.a.garrett@sas02.usace.army.mil</a>
Craig Wiederhold	Sr. Planner	CESAS-PD-PF	912-652-5388 <a href="mailto:Craig.n.wiederhold@sas02.usace.army.mil">Craig.n.wiederhold@sas02.usace.army.mil</a>
Bill Bailey	Sr. Planner	CESAM-PD-E	912-652-5781 <a href="mailto:William.g.bailey@sas02.usace.army.mil">William.g.bailey@sas02.usace.army.mil</a>
Steve Calver	Environmental Specialist	CESAM-PD-E	912-652-5797 <a href="mailto:James.s.calver@sas02.usace.army.mil">James.s.calver@sas02.usace.army.mil</a>
Joe Hudak	Civil Engineer	CESAS-EN-TS-GS	912-652-5681 <a href="mailto:Joseph.d.hudak@sas02.usace.army.mil">Joseph.d.hudak@sas02.usace.army.mil</a>

# **SPECULATION LIST**



<b>Y, N, C, BD</b>	<b>Proposal No.</b>	<b>PROPOSALS</b>
<b>Y</b>	1	Enlarge existing turning basin in lieu of building the new turning basin in the upper East River as authorized by Congress
<b>Y</b>	2	Add upstream and downstream transition to the turning basin to enhance the operation of the turning basin.
<b>Y</b>	3	Make transitions to turning basin a bid option.
<b>Y</b>	4	Abandon Jekyll Island mitigation plan and mitigate for the project in hammocks adjacent to project site.
<b>Y</b>	5	Increase width of slope stability bench from 30' to 70', add grassing requirement and incorporate into the mitigation plan to satisfy the acreage requirements.
<b>C</b>	6	Construct the required dike raising on Andrews Island concurrent with the turning basin construction activity
<b>BD</b>	7	Convert high marsh area (59 acres) on Jekyll Island to spartina conducive marsh to mitigate the 18.1 acres disturbed by the new turning basin.
<b>BD</b>	8	Dispose of Jekyll Island excavated material by barge on Andrews Island
<b>N</b>	9	Dispose of Jekyll Island excavated material by mounding in sanitary land fill on Jekyll Island
<b>N</b>	10	Dispose of Jekyll Island excavated material on Andrews Island by truck
<b>N</b>	11	Use Vis-à-Vis Island for mitigation in lieu of Jekyll Island
<b>N</b>	12	Use Jointer Island for mitigation in lieu of Jekyll Island
<b>N</b>	13	Use Little St. Simons Island for mitigation in lieu of Jekyll Island
<b>N</b>	14	Use Wainwright proposal for Marshes of Glynn for mitigation in lieu of Jekyll Island
<b>N</b>	15	Use Cowpen creek for mitigation in lieu of Jekyll Island

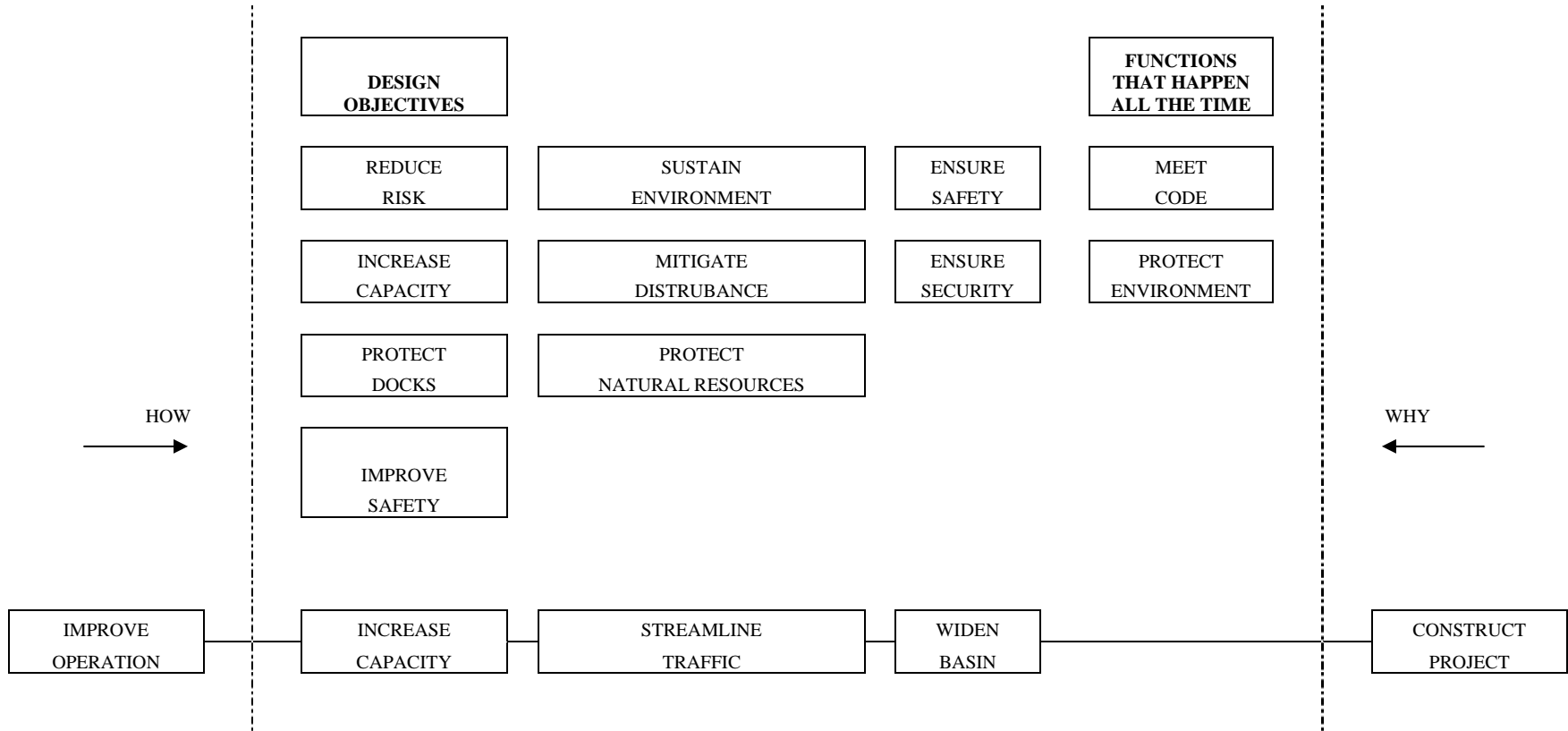
# **COST MODEL**

**THE INFORMATION TO PRODUCE A  
COST MODEL WAS NOT AVAILABLE**

# **FAST DIAGRAM**

**(Functional Analysis System Technique)**

# BRUNSWICK HARBOR DEEPING EAST RIVER TURNING BASIN PROPOSAL



## FAST DIAGRAM

(FUNCTION ANALYSIS SYSTEM TECHNIQUE)